



GOVERNMENT OF NORTHERN IRELAND.

Seventh Annual Report
of the
Ministry of Agriculture
1927-1928.

Presented by Command of
His Grace the Governor of Northern Ireland.

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1929

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Government House,

Hillsborough,

Northern Ireland,

30th January, 1929.

Sir,

In the absence on leave of the Private Secretary, I have the honour to acknowledge the receipt of your letter, A.1206/28, of 28th January, 1929, covering the Seventh Annual Report of the Ministry of Agriculture for Northern Ireland.

This Report will duly be laid before the Governor.

I am, Sir,

Your obedient Servant,

F. LEWIS HASLETT,

Assistant Private Secretary.

The Secretary,

Ministry of Agriculture,

Wellington Place,

Belfast.

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GOVERNMENT OF NORTHERN IRELAND.
SEVENTH ANNUAL REPORT
OF THE
MINISTRY OF AGRICULTURE.

TO HIS GRACE, JAMES ALBERT EDWARD, DUKE OF ABERCORN, K.G.,
K.P., GOVERNOR OF NORTHERN IRELAND.

MAY IT PLEASE YOUR GRACE,

I have the honour to submit the Seventh Annual General Report of the Ministry of Agriculture for Northern Ireland, covering the Ministry's operations from the 1st October, 1927, to the 30th September, 1928.

The Report is divided into the following sections :—

1. Advisory Committees.
2. County Staffs.
3. Finance.
4. Agricultural Loans.
5. Agricultural Education.
6. Research.
7. Special Horticultural Experiments.
8. Marketing.
9. Agricultural Schemes.
10. Agricultural Laws, including Diseases of Animals Acts.
11. Flax and Potato Industries.
12. Forestry.
13. Statistics and Intelligence.
14. Surveys.

1. ADVISORY COMMITTEES.

Meetings of the Ministry's Advisory Committees were held as follows during the past year :—

Consultative Committee ... 4th May, 1928 ; 25th July, 1928.

The second meeting of the Consultative Committee took place at the North-West Agricultural School, Strabane, and the members were thus afforded an opportunity of inspecting the School buildings, experimental plots, crops, poultry runs, orchard and farm buildings.

Advisory Committees.

Horses	27th April, 1928.
Cattle	9th December, 1927 ; 2nd May, 1928.
Pigs	2nd May, 1928.
Sheep	27th April, 1928.
Potatoes	17th August, 1928.
Dairying	16th December, 1927.

The personnel of the Committees remained unchanged during the year with the exception of the following additions to the membership of the Potato Advisory Committee :—Mr. Roy B. Holmes, Knockmoyle, Omagh; Mr. Wm. Maybin, Dunaird, Broughshane, Ballymena; Mr. Wm. Stewart, c/o Messrs. Stewart and Orr, Ltd., Oxford Street, Belfast.

Advisory Committee on Fruit. It was decided to appoint a small advisory committee to advise the Ministry on matters relating to the grading and marketing of fruit grown in Northern Ireland, and such a committee was set up in April, 1928, representation being given to the following interests :—Portadown Chamber of Commerce; Northern Ireland Fruit Growers' Association; Belfast and District Retail Fruiterers' Association; Irish Fruit Buyers' Association, Limited; Ulster Farmers' Union; County Armagh Committee of Agriculture.

The personnel of this Committee is as follows :—

- Mr. Robert Anderson, J.P., Novara, Portadown.
- Mr. Samuel M'Gredy, Royal Nurseries, Portadown.
- Mr. John M'Grane, J.P., Tamnavelton, Tandragee.
- Mr. D. J. Hall, Derrycorrey, Portadown.
- Mr. G. Green, 185 Ormeau Road, Belfast.
- Mr. Wm. Stevenson, 211 Shankill Road, Belfast.
- Mr. R. J. M'Candless, 3 Oxford Street, Belfast.
- Mr. John Wilkinson, St. George's Market, Belfast.
- Mr. A. Hamill, St. George's Market, Belfast.
- Mr. Thomas H. Hardy, J.P., Woodlawn, Richhill.
- Mr. Thomas M'Dowell, Secretary, Ulster Farmers' Union, 5 Royal Avenue, Belfast.
- Mr. J. J. W. Dunlop, Rosemount, Annaghmore.
- Mr. John Moffat, Lisnamintry, Portadown.

Agricultural Produce Committee.

During the period under review the Agricultural Produce Committee completed its task, and on the 15th November, 1927, presented its report, which has been published by the Stationery Office.

It will be recollected that this Committee was appointed by the Minister of Agriculture in April, 1927, under the Chairmanship of Mr. J. M. Mark, M.P., to inquire into—

- (a) the cost of transit of farm produce;
- (b) the causes of the difference in prices obtained by producers and the prices charged to consumers; and
- (c) the methods of marketing agricultural produce generally; and to submit recommendations.

The Committee's report, which, in view of the very general interest in the subject matter of the inquiry, was eagerly awaited, made the following principal recommendations :—

1. Carrying companies should revise rates (paragraph 12).
2. Postal rates for farm produce should be reduced (paragraph 19).
3. Adequate educative efforts should be undertaken to develop co-operation amongst the agricultural community (paragraph 25).
4. Primary education in rural districts should be given an agricultural trend (paragraph 25).
5. All farm produce should be brought within a system of compulsory inspection. The compulsory inspection of potatoes for export is a matter of urgency (paragraphs 29 and 33).
6. In the case of Northern Ireland livestock entering ports in Great Britain, the detention period should be substantially curtailed if not cancelled (paragraph 41).
7. The production on farms of inferior butter should be discouraged (paragraph 48).
8. The establishment of credit banks for the farming community should be considered (paragraph 53 (3)).

These various recommendations have received the most careful consideration, and important steps have already been based upon them.

Possibly the most important step which has been taken on the lines recommended by the Committee is the introduction to the Northern Ireland Parliament of a Bill to regulate the Northern Ireland potato export trade. This matter is referred to in detail in a later section of this report.

Conferences.

During the year under review conferences with officials of county committees of agriculture were held as follows :—

Instructors in Agriculture :—1st October, 1927.

Instructors in Horticulture :—17th and 18th November, 1927.

Instructors in Poultry-keeping and Butter-making :—21st December, 1927; 25th June, 1928.

Agricultural Overseers :—11th July, 1928.

2. COUNTY STAFFS.

The last day of the year covered by this report coincided with the retirement, under the age limit, of Mr. Andrew J. Morrow, who for over twenty-seven years had carried out the duties of Secretary to the county Down committee of agriculture.

Consequent on the death of the Secretary to the county Armagh committee of agriculture, referred to in last year's report, the Ministry deemed it advisable to give careful consideration to the question of the duties to be discharged in future by persons holding the post of Secretary to a county committee of agriculture, and to

the matter of future appointments. Hitherto selections for these appointments had almost invariably been made solely from the point of view of capacity to perform efficiently the purely secretarial duties attaching to the post, but having regard to the continuous development of the various agricultural schemes administered by county committees the Ministry considered that the time was opportune to insist that the person appointed must, in addition to performing the usual duties of a secretary, be qualified to act as agricultural organizer for the county, and if necessary be capable of giving lectures upon agricultural subjects generally, including live stock. It was felt that a secretary possessing technical qualifications comparable with those of an agricultural instructor would, when visiting farmers, be in a much better position to emphasize and discuss the advantages to be derived from county educational and live stock improvement schemes, and the Ministry was convinced that the maximum benefit from the committees' schemes would best be secured to the agricultural community in future if vacancies of this nature were filled by fairly young men of good personality, energetic and tactful, possessing not only technical qualifications, such as a Degree or Diploma in Agriculture, but a knowledge of and experience in practical agriculture, and competent also to perform the secretarial duties attaching to the post. The desirability of making appointments on these lines was pointed out to the two county committees concerned, namely Armagh and Down, who agreed in principle, and made their appointments accordingly. The new designation of the post is "Agricultural Organizer."

During the year the Ministry sought legal opinion on the question of the chargeability of pensions granted under the Local Government (Ireland) Act, 1919, to former officers of agricultural committees appointed by county councils under Section 14 of the Agriculture and Technical Instruction (Ireland) Act, 1899, and was advised that such pensions were payable by county councils out of county council funds, and could not be charged to the special funds for agricultural purposes administered by county committees of agriculture. Since the Ministry commenced to function four ex-officers of county committees of agriculture in Northern Ireland have been awarded pensions under the Local Government (Ireland) Act, 1919, viz. : Messrs. P. Brock, instructor in horticulture, county Fermanagh ; S. J. Magill, instructor in horticulture, county Tyrone ; A. J. Morrow, Secretary, county Down committee of agriculture, and T. Scott, instructor in horticulture, county Down.

3. FINANCE.

Pro forma accounts for the financial year 1st April, 1927, to 31st March, 1928, are shown in the appendices pages 119 to 128 inclusive.

The total final expenditure for that year, including that incurred through local authorities is summarized under the following broad heads :—

	£
Agricultural Research and Faculty of Agriculture (including Building Grant to Queen's University and Grants towards endowment of Hillsborough Research Station and capital expenditure thereon) ..	63,115
Agricultural Education	41,879
Live Stock Schemes	32,589
Flax and Potato Industries	9,597
Forestry (including Unemployment Relief Scheme and purchase of new areas for afforestation) ...	19,111
Marketing of Agricultural Produce	4,417
Collection of Agricultural Statistics	3,269
Subsidies to Shows	1,951
Improvement of Dairying	1,897
Miscellaneous Agricultural Services	1,370
Ordnance and Geological Surveys	9,148
Diseases of Animals Acts	22,927
General Expenses	46,195
	<hr/>
	£257,465

Towards this expenditure local rates contributed £10,754, being the produce of a rate of one penny in the pound levied by the several county councils for the purposes of agriculture and other rural industries in accordance with Section 78 (1) of the Education Act (Northern Ireland), 1923. The greater part of the expenditure was defrayed from Votes of the Parliament of Northern Ireland.

A sum of £5,000 was advanced to county committees of agriculture from the Agricultural Development Fund in aid of expenditure on live stock schemes. The origin and objects of this Fund, which was established by the Exchequer and Financial Provisions Act (Northern Ireland), 1927, have already been described in the Ministry's sixth report.

The Parliamentary Votes included a fifth instalment of £14,671 on account of the special grant of £54,000 provided for certain agricultural purposes as indicated in the Ministry's third report. The sum of £14,671 included a re-vote of balances remaining unexpended out of instalments voted in previous years. As this special grant would normally expire in 1928-9 it became necessary to review the financial position of the services covered thereby. That part of the services, hitherto financed from the grant, which related to the provision of bulls and rams, has accordingly been transferred to the Agricultural Development Fund, and the remaining schemes will be continued as a normal part of the Ministry's activities, provision for which is made in the ordinary Vote for Agricultural Services.

4. AGRICULTURAL LOANS.

(a) *Purchase of Bulls*.—This scheme, which provides for the granting of loans to purchasers of bulls which are up to premium standard and better-class licensed bulls of the Shorthorn type, was availed of to a larger extent than in any previous year. There were 35 applications received, and of these 31 were granted, 17 of the approved applicants residing in county Fermanagh, 5 each in counties Down and Tyrone, three in county Antrim and one in county Armagh. All the animals were up to premium standard, 10 of the bulls having been purchased in Scotland, 2 in Dublin, 15 at Balmoral and 4 at Londonderry.

Three subsidies were given to associations of farmers towards the purchase of stock Shorthorn bulls for use with pedigree herds. The breeders concerned are required to keep the bulls for five years for the service of pure-bred Shorthorn cows. The object of the scheme is to provide, so far as funds permit, high-class bulls for the grading up of pedigree herds. Such herds are the main suppliers of bulls for the premium and licensing schemes, and consequently these subsidies ultimately benefit the small farmer by placing better-class sires within his reach.

(b) *Purchase of Stallions*.—Seven loans were granted for the purchase of stallions. These were all Clydesdale animals, six of them having been bought in Scotland and one in Northern Ireland for location in the following counties:—

3 in county Down.

2 in county Antrim.

1 each in counties Armagh and Tyrone.

Each borrower was also given a subsidy equal to one-half the purchase price of the stallion, and was required to keep the animal for the period of the loan, viz., 5 years in the district in which it was located.

(c) *Purchase of high-class Rams*.—One ram, placed in 1927 under the Ministry's special scheme, proved to be unfruitful. The owner was given permission to dispose of the animal to the butcher, and was granted a subsidy in respect of another animal.

(d) *Purchase of Agricultural Machinery*.—Two loans were granted for the purchase of agricultural machinery and implements—for a Fordson tractor in one case and a Ferguson plough in the other.

(e) *Fencing*.—These loans are intended to enable farmers, especially in the poorer mountainous districts, to erect fences so that their arable and grazing land can be used to the best advantage.

Seven loans were granted to enable the farmers concerned to fence off mountain grazing. Two other applications are under consideration.

Live Stock Replacement Loans.

Previous reports have contained references to this scheme of loans designed to assist farmers in replacing live stock lost owing to unfavourable weather conditions. Facilities for loans of this nature were again provided during January, 1928. The following is a summary of the complete operations under the scheme :—

Year of Scheme.	No. of Applicants.	Loans Granted	
		No.	Amount.
1925 ...	1,211	982	£ 45,509
1927 ...	749	483	23,753
1928 ...	249	186	8,727
Totals ...	2,209	1,651	77,989

In order that the repayment of these loans should impose the minimum of hardship, various concessions, certain of which have been referred to in previous reports, were made to borrowers. Repayment for each class of loan has now, however, been placed on a final and uniform basis. The outstanding balances of loans granted in 1925 are now secured by promissory notes covering payment by four instalments on the 31st December in each of the years, 1928 to 1931 inclusive, while the outstanding balances of loans granted in 1927 and 1928 will be repaid by five annual instalments on the 31st December in each of the years 1928 to 1932.

5. AGRICULTURAL EDUCATION.

As indicated in previous annual reports, the employment of instructors in agriculture and agricultural overseers forms the groundwork of the system of agricultural education in Northern Ireland. The direct influence which the work of the instructors and overseers brings to bear on farming methods in Northern Ireland will be evident when it is realized that almost 20,000 farm visits were made and 3,500 demonstration plots laid down during the year ended 30th September last. As the work of the overseers is in the main confined to the poorer areas the increase to a total of sixteen in the number of these officers has made it possible to concentrate to a greater degree on bringing to the notice of the more backward members of the farming community the practical advantages to be derived from the adoption of improved methods of cultivation and of managing live stock.

The other features of the system of agricultural education, such as winter agricultural classes and schools, viz., Greenmount Agricultural and Horticultural College, the Ulster Dairy School and the

North West Agricultural School, operated normally during the year, and the extent of the demand for training at the different institutions, particularly at the Ulster Dairy School and the North-West Agricultural School, is clear evidence that farmers generally realize the desirability of availing of the facilities offered by the Ministry for the training of young persons from rural districts. The demand for university training in agriculture is also steadily growing; the number of candidates in past years for the Ministry's scholarships in agricultural science tenable in the Faculty of Agriculture of Queen's University being—1923, thirteen; 1924, eight; 1925, eleven; 1926, sixteen; 1927, twenty. Thirty-five applications have been received in connexion with the examination for these scholarships to be held early in October. Twenty of these applicants have already matriculated, and the remainder sat at the autumn matriculation examination of the University, which commenced on the 24th September.

At the close of the academic year 1927-28 three agricultural students completed the prescribed course of training in the University and obtained the degree in agriculture.

Scheme of Itinerant Instruction in Agriculture.

The following table gives details of the duties carried out by the instructors employed under this scheme :—

County	Instructors employed	Farms visited	Lectures delivered	Attendance at lectures	No. of Field experiments carried out	No of demonstrations laid down
Antrim ...	2	976	14	473	42	109
Armagh ...	1	630	11	319	21	177
Down ...	2	950	12	689	41	131
Fermanagh ...	1	798	8	214	15	118
Londonderry ...	1	461	5	237	20	110
Tyrone ...	3	1,639	25	1,157	54	295
Total ...	10	5,454	75	3,089	193	940

Agricultural Overseers.

Five additional overseers were appointed during the year, making a total of sixteen such officers now in the employment of county committees.

The duties of these overseers, whose activities are restricted to a definite area in each county and who work under the supervision of the agricultural instructors, consisted in the main of visits to farmers for the purpose of affording advice on problems arising in connexion with their work and of laying down demonstration plots.

The work of these overseers is centred in the more backward farming districts, and consequently it is of the utmost importance that demonstration work should constitute a special feature of the agricultural education provided in these localities. Financial considerations prevent persons in straitened circumstances, as are so

many of the farmers in these areas, from embarking in any additional expenditure, unless they are reasonably assured of the success of the venture. Demonstration plots are, in the circumstances, of great utility, as they afford to neighbouring farmers practical evidence of the soundness of the advice given by the overseers in connexion with farm visits and of the information contained in the Ministry's educational leaflets. A summary of the duties discharged under these heads is given hereunder :—

County	Overseers employed	Farm visited	No. of demonstrations laid down
Antrim ...	2	1,042	275
Armagh ...	2	1,854	346
Down ...	2	1,480	291
Fermanagh ...	3	2,804	459
Londonderry ...	3	3,139	484
Tyrone ...	4	3,257	613
Total ...	16	13,576	2,468

Demonstrations with wild-white clover and phosphatic manures, particulars of which are given at page 21, are included in the above table.

A summary of the work assigned to agricultural instructors is set forth in scheme No. 8, a copy of which appears at pp. 18 to 20 of the appendices to the Ministry's report for 1922. The following additional duties are now discharged by these officers :—To advise farmers regarding the care and management of premium animals under the Ministry's live stock schemes and the licensing of stallions under the Horse Breeding Act (Northern Ireland), 1926, and of bulls under the Live Stock Breeding Act (Northern Ireland), 1922.

Winter Agricultural Classes Scheme.

Classes were held at twenty centres and were attended by 285 students, of which number 133, whose attendance was regular and whose progress was satisfactory, were awarded certificates. Courses of instruction in agriculture and horticulture were given at each class, and, in addition, practical lessons in veterinary hygiene covering the diagnosis and treatment of common ailments of live stock, were provided at the classes in four counties. In the syllabus of instruction in agriculture special attention was devoted to (a) the breeding, feeding, management and marketing of pigs; (b) feeding stuffs, with special reference to the provisions of the Fertilisers and Feeding Stuffs Act, and the utilization of home grown foods; (c) improvement of pasture; (d) live stock experiments and field experiments and demonstrations in progress during the period of the class.

In addition to the class room instruction which is of a type suitable for application on the farms in the districts in which the classes are held, arrangements are made for the attendance on certain days of the students at practical outdoor demonstrations, both in agriculture and horticulture, on farms and gardens in the area from which the pupils are drawn. It is, of course, essential that the teaching should be on practical lines, as the subsequent application on their own farms of the knowledge acquired by these boys is an invaluable medium through which to bring home to neighbouring farmers the advantages of agricultural education. Many students from these classes, who find it possible to leave their homes for a lengthened period and who are desirous of extending their knowledge, proceed subsequently to the Greenmount Agricultural and Horticultural College, Muckamore, county Antrim, where a course of about ten months' duration is held annually. Almost all the entrance scholarships to this college, which are provided by the several county committees, are secured by winter agricultural class pupils.

The following table sets out the class centres and the number of students enrolled at each centre :—

County.	No. of Centres.	Centres.	No. of students enrolled.
Antrim	4	Broughshane	15
		Cloughmills	17
		Magheragall	12
		Ballynure	19
Armagh	2	Blackwatertown	10
		Silverbridge	13
		Ballywalter	15
Down	4	Killinchy	10
		Mullartown	11
		Mayobridge	16
Fermanagh	2	Derrylin	19
		Coonien	12
Londonderry	2	Moneymore	13
		Magherafelt	19
		Ballygawley	10
		Clanabogan	16
Tyrone	6	Ardbarron	15
		Urney	13
		Coalisland	11
		Killeenan	19

Particulars of this scheme will be found at pages 21 to 24 of the appendices to the Ministry's annual report for 1922.

Greenmount Agricultural and Horticultural College.

This college, which possesses up-to-date equipment for a training in agriculture, affords farmers' sons ample facilities for the practical application of the principles taught in the class rooms. During the

past year the existing farm of 187 acres was enlarged by the purchase of an area of 56 acres. The farm, on which a herd of pure-bred and cross-bred dairy cows is maintained, is worked as a mixed tillage farm and the students are given practical training in every aspect of farm work as carried out in Northern Ireland.

The large garden and the orchard with glass houses provide facilities for the specialized instruction necessary in the case of students taking out the horticultural as distinct from the farming course.

The various county committees of agriculture in Northern Ireland offered for competition among young men, the sons of farmers in their respective counties, forty-seven scholarships each of the value of £65 covering tuition, board, residence and ordinary medical attendance, and tenable at the college during the session 11th October, 1927—31st July, 1928. Competitive examinations were conducted by the Ministry at a selected centre in each county, and candidates were required to undergo a test in English, Arithmetic and Agriculture (written and oral) and as a result of these examinations thirty-eight of the candidates were awarded scholarships. In addition, two students whose answering at the examination held in connexion with the Ministry's scholarships in agricultural science, 1927-28, while not of sufficiently high standard to qualify for the award of a scholarship in the Agricultural Faculty of The Queen's University, showed that they were of the type suitable for admission to training at Greenmount College, were awarded Greenmount scholarships by the committees of agriculture for the counties of which they were residents. A total of thirty-nine students, of whom thirty-seven took out the course in agriculture and two the course in horticulture, were admitted to the college for the 1927-28 session.

Scholarships as follows were offered and awarded by the various county committees of agriculture :—

			Offered.	Awarded.
Antrim	...	...	15	7
Armagh	...	...	4	4
Down	...	...	14	14
Fermanagh	...	...	2	2
Londonderry	...	...	5	4
Tyrone	...	...	8	8

The following particulars regarding students who passed through the college during the period January, 1922—August, 1927, are of interest, showing as they do that approximately 98 per cent. of

the pupils who received instruction followed an agricultural career subsequent to the completion of their training :—

(a) Following farming in Northern Ireland ...	116
(b) Obtained posts of an agricultural nature in Northern Ireland ...	27
(c) Emigrated to follow farming ...	9
(d) Took up non-agricultural work ...	3
Total	155

Eleven students were admitted to a special short course of practical training in agriculture which was held at the college for the benefit of applicants for the Ministry's scholarships in agricultural science, 1928-29. The course which opened on the 10th September was arranged to continue for a period of about four weeks.

Full particulars regarding the courses of instruction provided at the college, fees, scholarships, etc., are given at pages 25-33 of the appendices to the Ministry's first annual report.

University Scholarships.

The Ministry again offered for competition in October, 1927, six scholarships in agricultural science tenable in the Faculty of Agriculture of The Queen's University of Belfast. Competition for these scholarships is restricted to students who have passed the matriculation examination of that University, or an examination accepted by the University authorities as equivalent. The examination which is conducted by the Ministry is designed to test the candidates' knowledge of practical agriculture, or their knowledge of elementary science as applied to agriculture, and a high standard of answering is required to secure a scholarship.

The examination in connexion with the scholarships for the academic year 1927-28 was held on October 13, 1927, at Greenmount College, Muckamore, county Antrim. Twenty-two candidates were summoned to attend the examination, and of these twenty attended.

As a result of the examination, which consisted of a written, oral and practical test in agriculture, six scholarships, each of the value of £100 per annum were awarded to the following candidates :—

- R. M'Crudden, 18 Sheridan Drive, Ballyholme, Bangor.
- J. C. Watson, Ballyrussell, Dundonald, Belfast.
- A. J. Boyd, Drumadonaghy, Kilwaughter, Larne, and Greenmount College, Muckamore.
- D. C. Gamble, Bridgehill, Castlederg, and Greenmount College, Muckamore.
- S. W. Lowe, Killynure, Carryduff, Belfast.
- J. C. Taylor, Holme Gardens, Ward Avenue, Bangor.

During the academic year 1927-28 there were eighteen holders of the Ministry's scholarships in attendance at lectures in the Faculty of Agriculture, viz., 3 fourth year students, 3 third year students, 6 second year students and 6 first year students. The three fourth year students, having passed the necessary examinations, obtained the degree of Bachelor of Agriculture, one gaining first class honours in one of the agricultural sciences, and in addition the degree of Bachelor of Science. One third year student was also successful in obtaining the degree of Bachelor of Science with first class honours. A satisfactory report as to the work and progress of the first, second and third year students was received, and the scholarships of these students have accordingly been renewed for the academic year 1928-29.

In addition to the Ministry's scholarship holders, there were three fee-paying students and two students holding scholarships from the Gibson Trust Fund taking out the course in the Faculty of Agriculture.

Ulster Dairy School.

Excellent courses of training are provided by the Ministry at the Ulster Dairy School for young women in Northern Ireland who desire to become efficient in all matters connected with women's sphere in ordinary farm life. Four courses of instruction in poultry-keeping, butter-making and rural housewifery are held annually at the school, at which there is accommodation for fifty pupils.

The training is designed primarily to meet the requirements of girls who propose to return to their homes, but in addition an advanced course of instruction is provided for girls who desire to qualify for the position of teacher of poultry-keeping and dairying. The students are afforded every opportunity of obtaining a complete practical experience of the subjects included in the curriculum. The herd of dairy cows maintained at the school enables the students to become acquainted with every aspect of dairying; the poultry runs, in which there are pens of the principal breeds of hens and ducks, are of the most modern type, and the students take part in all the routine work connected with the care and management of the birds, while in the fully equipped kitchen and laundry a thorough practical experience of cookery and laundry work is gained.

The practical value of the instruction provided is widely appreciated by the farming community, as is evidenced by the fact that there is a large waiting list of applicants for admission to the school.

During the period 11th October, 1927, to 28th September, 1928, 94 girls—of whom 34 had entered during the previous year—received instruction at the school. The training of 66 pupils was completed, 16 having been in residence for one term, 3 for two terms, 33 for three terms and 14 for four or more terms.

Forty pupils qualified for the award of the school certificate, and two girls who desired to qualify for the post of itinerant instructor

in poultry-keeping and butter-making were selected for a twenty weeks' course at an approved poultry farm in Northern Ireland in order to gain further practical experience. During the year three pupils were awarded creamery apprenticeships, which provide for a free course of training at an approved creamery in Northern Ireland with an allowance towards the cost of maintenance.

Particulars as to the attendance of pupils at each term during the period 11th October, 1927, to 28th September, 1928, are appended :—

Term.	Attendance.
11th October—23rd December, 1927	50
5th January—23rd March, 1928	49
2nd April—15th June, 1928	42
17th July—28th September, 1928	43
Total	184

In addition to the utilization of the farm for the educational purposes of the school, plots are laid down in a portion of the farm under tillage to test the newer varieties of potatoes, oats and roots.

During the year about 650 members of the farming community visited the school in order to see the work in progress.

North West Agricultural School.

The courses of training provided at this school include, as in the case of the Ulster Dairy School, instruction in poultry-keeping, butter-making and rural housewifery. There is accommodation for 24 pupils, and four courses each of about 11 weeks' duration are held annually. All county committees of agriculture in Northern Ireland provide free scholarships tenable at the school for girls resident in their respective counties. The course of instruction forms an excellent preliminary training for girls who desire to take out a more extended course at the Ulster Dairy School. During the year a number of girls who had taken out a course at the North West Agricultural School, and who, in view of their progress at the school, were regarded as suitable for further training, were approved by the Ministry for admission to the Ulster Dairy School.

The following table gives details as to the attendance of pupils at the school during the period 11th October, 1927, to 28th September, 1928 :—

Term.	Attendance.
11th October—23rd December, 1927	24
5th January—23rd March, 1928	23
2nd April—15th June, 1928	18
17th July—28th September, 1928	23
Total	88

Experimental and demonstration work is carried out on the farm attached to the school, and the annual demonstration on the 18th September, which was held with the object of bringing the results to the notice of the public, was attended by a large number of farmers from the surrounding districts. The farm is also utilized in connexion with the plant breeding division, Stormont, for the propagation of new and selected varieties of oats and the produce is made available for variety trials and for distribution to farmers.

Full particulars as to the courses of instruction at the foregoing two schools will be found at pp. 33-35 of the appendices to the Ministry's annual report for 1922.

Agricultural Experiments.

The scheme of agricultural experiments carried out in 1927-28 by the instructors in agriculture did not differ materially from that in operation during the previous years. The alterations and modifications are indicated on pp. 132-134 of the appendices to this report. The following table shows the number and nature of field experiments :—

Experiments	Manurial Experiments	Variety of Seeds Experiments	Grass Seeds Mixtures Experiments	Residual Value Experiments	Liming Exer- ments	Others .	Total
Potatoes	10	26	—	—	—	—	36
Turnips	—	10	—	—	—	—	10
Mangels	—	10	—	—	—	—	10
Oats	16	29	—	—	—	9	54
Wheat	1	5	—	—	—	—	6
Hay	7	17	29	—	—	—	53
Wild White Clover	—	—	—	13	—	—	13
Grazing	—	—	—	—	11	—	11
Totals	34	97	29	13	11	9	193

*Oat crop rate of seeding test.

Sugar Beet Experiments.

Following the recommendations of the Commission on the Natural and Industrial Resources of Northern Ireland, sugar beet experiments, which were introduced in 1926-27, were again laid down. The conditions prescribed by the Ministry regarding the growing of the beet were similar to those obtaining last year, except that the plots were sown exclusively with Dutch seed instead of being divided between Dutch and German. The experiments were laid down at 20 centres under the supervision of the instructors in agriculture.

Horticultural Experiments.

The alterations from the previous year's scheme of horticultural experiments are indicated at p. 131 of the appendices to this report. The following table shows the number and nature of horticultural experiments carried out during the period under review :—

County.	Apple Scab.	Manuring of Apple Trees.	Manuring of Black- currant Bushes.	Acarine Disease.	Total.
Antrim ...	3	2	3	1	9
Armagh ...	2	1	2	1	6
Down ...	1	1	1	3	6
Fermanagh ...	1	1	—	—	2
Londonderry ...	1	—	1	1	3
Tyrone* ...	—	—	—	—	—
Totals ...	8	5	7	6	26

*Instructor appointed 1-2-28.

Live Stock Experiments.

Experiments to obtain information as to the economic possibilities of feeding calves for "baby" beef were carried out at 4 centres in the counties of Down and Tyrone. An experiment designed with a view to ascertaining the comparative values of two mixtures of concentrates for the production of "baby" beef was conducted at 2 centres in the counties of Down and Tyrone. Pig-feeding experiments to compare the merits of indoor and outdoor fattening and to determine the value of a mixture of minerals with and without the addition of foods rich in protein for fattening purposes were carried out at 8 centres in the counties of Antrim, Down, Fermanagh and Tyrone.

Other Experiments.

Arrangements were made for the conducting of an experiment with potatoes, using a new manure, "nitrophoska," against standard mixtures of artificials. Details of the experiment will be found at p. 133 of the appendices to this report. Many additional experiments of local interest are carried out annually by the instructors in agriculture, the results of which are contained in the reports of the several committees of agriculture.

Demonstrations.

There was a further increase in the number of demonstration plots laid down by instructors and overseers. During the period under review 3,500 plots were laid down, an increase of 500 over the number laid down during the previous twelve months. The

majority of the plots are located in the more backward areas, which offer the greatest scope for the application of improved methods. These plots relate chiefly to the improvement of pastures by the sowing of good seeds mixtures, proper methods of manuring, and the introduction of improved varieties of different crops. They are of considerable value in bringing to the notice of farmers the results obtainable by the adoption of up-to-date methods, as they serve to drive home in a practical manner the lesson they are intended to teach, and are a convincing corollary to the recommendations made by the instructors in the course of their lectures to farmers.

Improvement of Pastures.

As in previous years special attention was given to the section of work on pasture improvement relating to the laying down of demonstrations which show the value of wild white clover, and the benefits resulting from the application of phosphatic manures.

The following table shows the number of these plots laid down in each county :—

County.	Wild White Clover.		Phosphatic Manure.	
	Number of Plots.		Number of Plots.	
	1926-27.	1927-28	1926-27	1927-28
Antrim ...	175	114	108	98
Armagh ...	56	65	62	118
Down ...	122	65	105	69
Fermanagh ...	56	85	144	141
Londonderry ...	79	103	78	108
Tyrone ...	137	167	144	162
Totals ...	625	599	641	696

Exhibits at Agricultural Shows.

The Ministry's educational exhibit at the 1928 annual show of the Royal Ulster Agricultural Society at Balmoral was very comprehensive and successful. Although the exhibit is purely educational, and is necessarily staged on a somewhat spectacular basis, every item included in it is selected with one object in view, viz., to indicate where possible how existing methods in agricultural practice may be modified so as to increase the farmer's returns and reduce his expenses. To achieve that purpose the whole routine of agriculture must be covered, and the success of the effort is shown by the crowded attendance in the Exhibition Hall during the three days of the Show.

The principal sections of the Exhibit related to—

Livestock.—The exhibits in this section attracted much attention. The importance of the live stock industry required a comprehensive display, especially with regard to the necessity for good quality stock, good management and efficient methods of marketing. Live animals were on view to illustrate :—

1. The advantages of milk recording.
2. The rearing of calves on crushed oats and separated milk.
3. The production of baby beef.
4. The advantages of dishorning calves intended for stores.
5. The improvement of mountain breeds of sheep through the use of good quality rams.
6. The breeds of pigs and first crosses.
7. The feeding of pigs on raw materials and cooked foods respectively.
8. The feeding of pigs indoors and outdoors.
9. The value of minerals in the feeding of live stock.
10. The correct type of bacon pig for cross-Channel markets.
11. The correct type of pig for the London small pork trade.

The requirements of the cross-Channel markets for pork and bacon pigs were indicated in a striking manner by an exhibit, including a specimen crate for the shipment of small pork, with dressed carcasses of pigs wrapped in stockinette and ready for despatch.

With regard to the trade in the export of live pigs from Northern Ireland to Great Britain, an object lesson for producers was provided by an exhibit of carcasses of pigs of the Large White Ulster breed, showing the deterioration in the value of the carcasses arising from the inability of the animals to withstand the rough usage imposed by the journey.

Crop Husbandry.—This section was devoted mainly to potatoes, cereals, flax and pasture. The fundamental teaching was that quality always tells, and that apart from consideration of any other factor good crops cannot be produced from inferior seed. In the case of potatoes especially, the importance of pure stocks of healthy seed was shown in a comparison of crop returns that could not fail to impress growers. The use of suitable seeds mixtures and the management of pastures were demonstrated by a very instructive series of exhibits.

Dairying.—The growing interest of the public in clean milk was shown by the crowded attendance each day at the demonstrations on the production of Grade A Tuberculin Tested Milk. The very great importance of an adequate supply of clean milk for all, especially for children and invalids, was emphasized.

Poultry-keeping.—Every phase of the industry was included in the exhibits in this section; hatching, rearing, culling, feeding, egg production and fattening were all suitably demonstrated. One of the most striking features in the Exhibition Hall was the exhibit of cases of packed eggs. As an illustration of the almost phenomenal advance in the Northern Ireland egg industry, brought about by the introduction of the Marketing of Eggs Acts, the exhibit could not fail to impress every visitor with the superior quality of Northern Ireland eggs.

Horticulture and Bee-keeping.—Very attractive exhibits were staged in this section stressing the importance of keeping crops of fruit free from damage by diseases and pests, and indicating suitable methods by which growers can, at trifling cost, make certain of reducing such damage to a minimum. The demonstrations of methods of bottling surplus fruits and vegetables for future use attracted a great deal of attention.

Marketing.—The interest taken in this department provided evidence that there is a growing need for instruction in the preparation of farm produce for sale, and in marketing methods.

Seed Testing.—A greatly increased interest on the part of farmers generally in the work of the seed testing division was apparent in the attention paid by visitors to this section. It is a healthy sign that the importance of seed testing is more and more appreciated each year by farmers, and that the question of pasture formation is receiving due attention where it is usually most required, viz., in the use of good quality seeds.

Animal Diseases.—This section provided agriculturists with first hand information relating to the maintenance of the health of their live stock and the prevention of loss due to causes such as tuberculosis, garget, abortion and sterility in cattle, liver fluke in cattle and sheep, worms in pigs, and gapes and bacillary white diarrhoea in poultry.

Agricultural Education.—This section constituted a useful survey of the facilities provided for agricultural education in Northern Ireland. Information was available regarding the courses of instruction at winter agricultural classes, at Greenmount Agricultural and Horticultural College for young men desiring a training in practical and technical agriculture and horticulture, including dairying and poultry-keeping, at the Ulster Dairy School and the North West Agricultural School, where farmers' daughters receive a thorough training in domestic science, and at the Agricultural Faculty of Queen's University, Belfast, where a degree course in agricultural science is provided.

Supplies of the Ministry's leaflets and other publications and specimens of Ordnance Survey maps were also available, and appeared to be much appreciated by visitors generally.

6. RESEARCH.

Chemical and Animal Nutrition Division.

During the past year the new Agricultural Buildings of Queen's University in Elmwood Avenue were completed, and the division entered into occupation at the end of March. The buildings were formally opened on July 6th by His Grace the Governor of Northern Ireland. Throughout the year heavy claims were made upon the time of the staff in connexion with the planning and erection of internal fittings and the technical equipment of the laboratories.

Soils and Fertilizers.—With the provision of an additional assistant for soil work it has been possible to continue the investigation into the liming problem, which was temporarily suspended owing to the other heavy commitments of the division. In previous years considerable data was collected relative to the total acidity in North of Ireland soils and attempts made to correlate the figures so obtained, and usually designated "lime requirement," with the results from liming experiments carried out by the county agricultural instructors. The results showed that, generally speaking, North of Ireland soils had higher lime requirement figures than those usually obtained with English soils. It was, however, not possible to correlate these figures with the results from field liming experiments as measured by crop increases. Indeed it is exceedingly doubtful if the major benefits derived from applications of lime are shown in the form of increased crop yields. There is a steady accumulation of evidence which, taken in the aggregate, suggests that to a very considerable extent a deficiency of lime in the soil is made good as far as the plant is concerned by other minerals, and that although, therefore, the yield may not be reduced the quality or feeding value is often lowered to a material extent. It is also, for example, fairly well established that a deficiency of lime, and occasionally of phosphoric acid in pasture herbage and hay, and not the actual yield or growth per acre, is mainly responsible for the differences which exist in feeding value, and accounts for the fact that certain pastures are poor stock rearing pastures and the stock peculiarly liable to various ailments. It will be seen, therefore, that the soil liming problem is by no means a simple one, and that any investigation requires to be carried through from the soil to the crop and finally to the animal. It is almost impossible to carry out such an investigation on a commercial farm, and a start on the problem is therefore being made at the farm at Hillsborough belonging to the Agricultural Research Institute of Northern Ireland. As a preliminary a soil survey of the farm has been made and is being mapped out. The intensity of the soil acidity has been measured on a number of the fields, and an experimental programme which will gradually be put into operation has been drafted. The effect of liming will be measured

not only on the rotation of crops, but by their composition, and finally by feeding the crops to the various classes of stock.

Baby Beef.—As stated in the previous annual report, experimental work has been suspended pending the provision of suitable facilities at the Hillsborough Research Farm. Experimental work will start in October. The work has been designed with the object of ascertaining (1) whether efficient control of the fodder portion of the ration will improve the normal daily live weight gains, and (2) whether a greater proportion of home grown foods which have a relatively low protein content can be utilized without lowering the rate of live weight gain.

Pigs.—The division continues to be responsible for the conduct of the experimental and recording work arranged in co-operation with the committee, representing the Ulster Farmers' Union and certain firms of bacon curers appointed to investigate, amongst other matters, the factors associated with taints in bacon. In this connexion two experiments have been completed, one comparing Large White Yorks, Large White Ulster and crosses of these two breeds from the point of view of type of carcase and quality of bacon. The three groups were fed on identical rations, and the pigs when slaughtered were submitted to inspection and cured in one factory under controlled conditions. The quality of the bacon from the three groups of pigs was very satisfactory. There was however a clear indication that the conformation of the carcasses and the proportion of fat to lean in the bacon was superior in the case of the Large White York and the cross bred groups. During the year a further experiment on the effect of various types of rations on the quality of bacon produced was completed. This experiment confirmed the results of a previous trial carried out on the same lines, namely, that a ration containing a good quality barley meal produced a firmer bacon fat than a similar ration containing a larger proportion of maize meal.

A third experiment was carried out in conjunction with the Cambridge Research Institute, the Rowett Research Institute, and the Harper Adams Agricultural College, to determine the effect on the quality of bacon and the live weight gains of the following types of maize meal: (a) whole flaked maize, (b) flaked degermed maize, and (c) ordinary maize meal. Each type of maize product produced substantially the same live weight gains. The results, however, indicated that the degermed flaked maize produced the firmest bacon fat.

In connexion with all the above experiments samples of back fat were taken under controlled conditions and the refractive indices and iodine values (which give an indication of the hardness or otherwise of the fat) determined in the laboratory. The results of these tests were in fairly close agreement with the findings of the curers. A report on this work is in course of preparation with a view to publication.

Poultry.—The staff of the division has been responsible for planning and directing operations at the Poultry Research Station at Hillsborough, the cost of erection and maintenance of which is being provided by the Empire Marketing Board. When finally completed the plant will consist of 20 rearing pens, capable of accommodating 2,000 chickens, 40 experimental laying pens with duplicate runs, and 12 breeding pens, and an office and stores. The work of erection was commenced in January, half the rearing plant, the twelve breeding pens, twenty laying pens and the office and food store have been completed. Possession of ten of the rearing pens was obtained in March, and in order to allow the experimental work to go forward arrangements were made with some of the foremost Ulster breeders to supply 700 day-old chicks on March 27th. These were subsequently divided into ten experimental groups. Previous experimental work had shown that for chicken rearing purposes separated milk is as good as and probably better than whole milk, and that a mash consisting of a mixture of cereals with separated milk to drink gives the best growth and rearing results. The 1928 experiment was designed with a view to ascertaining the factors in milk responsible for the remarkable growth results, and in particular whether a ration consisting of commonly used feedingstuffs could be devised which would give as good results as when milk is fed. The experiment brought to light several very interesting facts, some of direct economic importance. In the case of several of the experimental groups the cockerels reached a weight of $3\frac{1}{2}$ lb., and were marketed prime fat at 12 weeks old. Clear evidence has been obtained that the minerals in milk are mainly responsible for the rapid growth and fattening results obtained. Moreover, the ration designed as a substitute for milk was completely successful, and quite as good results were obtained from it as from the milk fed groups.

The difference in the rate of growth between the various groups was remarkable. Certain of the groups gained weight at twice and others at three times the rate of the control group. The cockerels from each group were sold off as soon as they reached a weight of $3\frac{1}{2}$ lb. Cockerels from the most advanced groups were sold in the first week of July when they were 12 to 13 weeks old, whereas the control group did not reach the requisite weight until August 28th, when the cockerels were 21 weeks old. As far as the disposal of surplus cockerels at a marketable weight is concerned the experimental work has a direct and important economic application. The pullets in the experimental groups were continued on their rearing rations until the first pullet in each group laid, when a standard laying mash was substituted for the rearing mash. The best developed groups started to lay on August 12th, when 19 weeks old, whereas the first pullet in the control group did not lay until September 28th, when the birds were 25 weeks old. Each group will be continued on the same laying mash for a period

of two years with a view to ascertaining the influence of the various standards of rearing on (a) the subsequent egg production, (b) the size of the egg, and (c) the incidence of broodiness.

For the purpose of obtaining further data concerning the influence of feeding on the size of the egg, a large number of pullets reared and managed at the station under identical conditions has been divided into five experimental groups. The first group, which serves as control, receives the Stormont laying mash; the second group, the Stormont mash, plus extra minerals; the third, the Stormont mash, less the fish meal, but with a double supply of minerals; and the fourth, the Stormont mash, plus extra protein (albuminoids) plus an extra dose of minerals. The ration for the fifth group consists mainly of bran, and has been designed to ascertain whether the exceptionally good results obtained in the rearing experiments from a ration consisting mainly of bran can be repeated with laying birds. The experiment will be continued for a period of two years; all the birds are being trapnested, and every egg weighed individually.

The experimental work carried out at Stormont with the co-operation of the poultry division has been continued on a modified scale. Particulars are given in the report of the poultry division. A preliminary report of the work was published in the Journal of the Board of Agriculture for Scotland, and a further report will shortly be published in the Ministry's Journal.

The division has continued to co-operate with the Scottish and Northern Ireland Joint Poultry Research Committee.

Sheep.—The experimental work described in the annual report for 1926-27 has been continued. As stated in that report the work must be carried on for several years before any definite conclusions can be drawn. So far the results have been very satisfactory, and the sheep farmers with whom the experiments are located are enthusiastic about the merits of the method.

Milk Testing.—The milk testing work continues to develop normally and to constitute an increasingly valuable medium for advisory work on the feeding and rationing of stock. The following table shows the number of samples analysed for each of the yearly periods from 1924 to 1928 :—

	No. of Associations.	No. of samples tested.
Year ended 30th September, 1924 ...	34	44,543
" " " " 1925 ...	42	76,936
" " " " 1926 ...	53	108,448
" " " " 1927 ...	61	127,690
" " " " 1928 ...	66	125,879

During the course of the year under review 16,787 reports were issued direct to farmers.

Advisory Work.—The advisory work steadily increases, particularly in connexion with the feeding of stock. It affords a very valuable medium for keeping the staff in close touch with farmers and farming problems.

Analytical Work.—Routine analytical work was carried out in connexion with various schemes of the Ministry, such as surprise butter inspections, sugar beet trials, etc., and also for the purposes of the Fertilizers and Feeding Stuffs Act.

Adulteration of Butter.—Representations having been made to the Ministry as to the alleged prevalence of the practice of adulterating farm butter by mixing with margarine, an investigation into this problem was conducted by the division. Butter is usually presumed to be adulterated when the Reichert-Wollny number falls below 24. This number is a measure of the volatile fatty acids present, and as there are no volatile fatty acids in margarine any admixture of margarine with butter lowers the Reichert-Wollny number. The crux of the whole position lies in the assumption that the number for genuine butter is never appreciably below 24. As there was considerable evidence to show that genuine butter may fall below this figure samples of butter were obtained at regular monthly intervals from five North of Ireland creameries, from the Ulster Dairy School, the North West School, Strabane, Greenmount Agricultural College, and from three farms where pure bred cattle were maintained. It was found that in all cases the butter produced was for several months during the year below the presumptive standard, and during certain periods the figures in several cases were approximately 30 per cent. below the presumptive standard. The investigation is being continued with a view to obtaining further data, and, more important still, arriving at an explanation of the facts.

Teaching.—In addition to the full teaching programme in agricultural chemistry for the Faculty of Agriculture the staff of the division gave several evening lectures to branches of the Farmers' Union and to milk recording associations. At the invitation of the Scottish Board of Agriculture the head of the division gave an address at the Scottish Poultry Instructresses Refresher Course at Edinburgh.

Miscellaneous.—The Agricultural Education Association held its annual meeting in Belfast during July in the new Agricultural Buildings at Elmwood Avenue. The staff of the division were responsible for the whole of the transport, accommodation, and local programme arrangements for the Conference. A paper was contributed to the Association's Poultry Committee and one to the General Meeting of the Association on the Organization of Agricultural Education and Research in Northern Ireland.

The head of the division has continued to serve as adviser on behalf of Northern Ireland to the British Representative on the Imperial Economic Committee.

Publication—

"The Influence of Certain Nutritional Factors on the Size of the Egg and the Condition of the Birds." By G. S. Robertson and R. G. Baskett. Journal, Board of Agriculture for Scotland. Vol. XI., 1928.

Crop and Animal Husbandry Division.

Advisory Work.—A considerable number of applications for advice was received from farmers during the year. These applications covered such matters as the feeding and management of the several classes of livestock, the manuring of grass lands, renovation and alteration of farm buildings, the keeping of farm accounts, etc. In addition to furnishing the desired information by letter, special visits to the writers' farms were made in many instances.

Teaching Work.—The teaching work for which the head of the division is responsible in connexion with the Agricultural Faculty of Queen's University may now be regarded as having reached its normal maximum. Demonstrations on some particular branch of farming were given on one day in each week during the summer term either at good farms in the country or, through the courtesy of the Trustees of the Agricultural Research Institute of Northern Ireland, at the Hillsborough Experimental Farm belonging to that Institution. It is hoped to develop this side of the teaching work more fully as the experimental work at Hillsborough increases.

Research.—Facilities for carrying out the research work of this division are provided by the Trustees of the Agricultural Research Institute at their Hillsborough farm. The head of the division is responsible for the general management and equipment of the farm. A number of new buildings, including a dairy byre, power house, farm office, etc., have already been erected and equipped, and the existing farm buildings are in process of adaptation to the requirements of the Institute. A considerable portion of the farm is under crop, and a fair stock of cattle and sheep has been acquired.

A commencement has been made in the keeping of cost accounts at this farm. These accounts are being kept in very full detail for all branches of the farm and for the various experiments which are at present in progress there.

During the past winter a demonstration of mole draining tackle and grass "rejuvenator" was given at the farm, and was attended by a large number of farmers.

Dairy Bacteriology Division.

This division was formed in October, 1927, and is accommodated in the Agricultural Buildings, Queen's University.

The main work of the division may be grouped under two headings—

- (1) Graded Milk. (2) Creameries.

(1) *Graded Milk.*—Within the last few years there has undoubtedly been a growing public demand for a better milk supply, and in Scotland and England legislation designed to encourage and protect the producers of "clean" milk has been in force for several years, numerous grades of milk being produced under Government licence. Recently in Northern Ireland the officers of the Animal Nutrition and Crop and Animal Husbandry Divisions endeavoured to interest the farmers in the production of a grade of milk corresponding to "Grade A (Tuberculin Tested)" in England.

The response to their efforts was quite encouraging, but it quickly became evident that legislation to protect the title "Grade A (Tuberculin Tested)" was necessary, otherwise the public had no guarantee that milk sold under this designation fulfilled the necessary requirements, as ordinary milk was being freely sold under the titles "Grade A," "Certified," etc. The result was the introduction of the Sale of Milk Act (Northern Ireland) 1927, which came into operation on the 2nd January, 1928, and is administered by the Ministry of Home Affairs.

The regulations made under this Act provide for the licensing of one grade of milk, viz., "Grade A Tuberculin Tested," and no milk vendor may use this or any similar title unless he holds a licence from the Ministry of Home Affairs.

It is generally admitted that the numerous grades of milk in Scotland and England are not satisfactory—at least five different grades are licensed, with the result that a consumer may purchase a comparatively poor grade under the impression that he is getting the best obtainable. This difficulty has been avoided in Northern Ireland by providing for one grade of milk only, thus there is no cause for confusion on the part of the consumer, Grade A Tuberculin Tested milk being merely clean raw milk produced from healthy cows certified free from tuberculosis. It is the function of the division to stimulate the production of Grade A Tuberculin Tested milk, to work out the problems connected therewith, and to carry out for the licensing authority, namely the Ministry of Home Affairs, the examination of all official samples.

At the present time there are twelve licensed producers and one licensed retailer of Grade A (T.T.) milk in Northern Ireland distributed as follows:—county Antrim, 5; county Down, 3;

county Derry, 3; county Armagh, 1; county Tyrone, 1. There are in addition several producers who intend to apply for licences in the near future.

Many milk producers are under the impression that it is impossible to obtain a licence under the Sale of Milk Act unless they possess expensive and elaborately equipped premises. This is entirely erroneous, for while thoroughly up-to-date buildings undoubtedly lessen the work connected with Clean Milk production the fact remains that *clean methods* are all-important. Several licensed farms in Northern Ireland have been fitted for clean milk production by carrying out only slight structural alterations, and it is the duty of the officers of the division to suggest and, when necessary, to plan these alterations, also to advise in the equipping of the dairy and sterilizing room. When the premises have been made suitable and the equipment installed the producer is advised on the methods of clean milk production, and supervision is continued until his workers are thoroughly familiar with the procedure.

The regulations made under the Sale of Milk Act allow a maximum bacterial content of 200,000 bacteria per cubic centimetre, and coliform bacilli must be absent in 1/100th cubic centimetre at any time before delivery to the consumer. During the summer months a weekly sample of milk from each licence holder was sent to the laboratory, where they were examined bacteriologically when, as near as possible, 24 hours old, and although they were not kept in an ice box, but under ordinary "household conditions," the bacterial content was, in some cases, as low as 100 per cubic centimetre and coliform bacilli absent in 1 c.c., while the majority were very much below the maximum 200,000 per cubic centimetre permissible.

The officers of the division also carry out surprise visits to licensed farms, and, during the six months April-September, 31 surprise samples were taken for bacteriological examination.

To the purchaser of milk the 200,000 bacteria per cubic centimetre and absence of coliform bacilli in 1/100th c.c. required for Grade A (T.T.) milk may not appear to be a very high standard; it is therefore of interest to quote the results of examination of 13 samples of ordinary milk supplied to a hospital in Northern Ireland; the laboratory examination in each case was exactly the same as that for Graded milk, except that these samples had the advantage of being only about 5 hours old as against the minimum of 24 hours old for Graded samples.

Of the 13 samples 6 contained over 2,000,000 bacteria per cubic centimetre, and 10 contained coliform bacilli in 1/100th cubic centimetre.

An encouraging feature of the "Clean Milk" movement is the fact that many hospitals, schools and other public institutions are

now demanding Grade A (Tuberculin Tested) milk, and its use for children and invalids is increasingly being advocated by medical officers and practitioners.

There is, unfortunately, still a large majority of the public who do not yet appreciate the value and enormous importance of clean raw milk; many purchase only the cheapest milk obtainable, while others delude themselves that any "bottled milk" is superior to ordinary market milk whereas it is, in many cases, a distinct danger to public health, due to the fact that the bottles are not sterilized, thus becoming potential carriers of numerous infectious diseases. It is, however, interesting to note that the introduction of the Sale of Milk Act has stimulated many dairy farmers to improve markedly their methods of production, and it is hoped that the majority of these will eventually be in a position to apply for licences.

(2) *Creameries*.—The production of creamery butter of a uniform standard quality is largely dependent upon the cleanliness of the milk supply received by the creameries. It is the function of the division to advise the creameries as to methods for the improvement and control of their milk supply. The division also affords advisory services to the creameries in connexion with bacteriological problems.

Since the completion of the laboratory in April, 265 samples were examined bacteriologically—210 samples of Grade A (T.T.) milk (31 being surprise samples); 24 samples of ungraded milk; 17 samples of cream; 9 samples of water; 4 samples of butter, and 1 sample of "starter."

Numerous visits to licensed farms and prospective producers of Grade A (T.T.) milk were made, and advice by letter given on various problems connected with clean milk production.

During the year three lectures were given on "The Value of Grade A Tuberculin Tested Milk."

Seed Testing and Plant Disease Division.

Since the date of the last report the division has been transferred to new premises in the permanent agricultural building, Elmwood Avenue, Belfast. This has conferred numerous benefits on its work. More extensive provision has now been possible for plant pathology, previously rather cramped, and the seed testing station has been divided into two sections, one for purity and one for germination testing. This change has greatly facilitated the rapid discharge of its routine duties. The difficulty of temperature maintenance consonant with efficient ventilation, to which attention was drawn on an earlier occasion has, it is hoped, now been completely removed. The station has, moreover, now been able to offer extended facilities to traders and farmers which its previous limited

accommodation made impossible. These extensions have been very cordially received, and better use is definitely being made of the station's services than heretofore.

Seed Testing.

During the season under review, a total of 2,959 samples (apart from experimental lots) were examined. This total was made up as follows :—

From wholesale and retail merchants ...	74.3	per cent.
„ farmers	10.0	„ „
„ Ministry's Official Samplers ...	9.0	„ „
„ Officers of Public Departments ...	6.7	„ „

In the previous report attention was called to the paucity of samples submitted by farmers. It is gratifying to report an increase during the season just ended of over 100 per cent. from this source. This substantial increment appears to be due, in large measure, to the active propaganda carried out, in conjunction with the Ministry, in the form of leaflets, press articles and personal contact with farmers. Itinerant instructors are also doing much to foster an interest in seeds and related problems in some counties. This is satisfactory, and effort should be concentrated on establishing carefully designed seeding, not as a practice ancillary to the main farm economy, but as an integral part thereof.

With the object of rendering reports of more general utility to agriculturists, the division designed, two years ago, a special type of report wherein an approximation to the *number* of weed seeds per pound of the sample is stated. In ordinary seed testing practice the result of purity analysis is given in percentage by *weight*. Unappreciable quantities, so estimated, have quite a different significance when attention is drawn to their numerical proportion, especially if the weed seeds are small. The system of estimating purity by weight, in vogue in most official seed testing stations, has the decided disadvantage of presenting samples which have very large numbers of small weed seeds in a more favourable light than their potentiality for evil would warrant. The average weed seed content per pound of all farmers' perennial ryegrass samples tested during the season was approximately 8,600. The maximum recorded figure was 129,000 per pound, or, on the basis of $1\frac{1}{2}$ bushels sowing rate, some five and a half million weed seeds per statute acre. This serves to emphasize the importance of grappling with the weed menace at its source, the more since climatic conditions in this country make weed killing a matter of immense difficulty. This type of report has more than justified its inception; numbers of farmers have expressed astonishment at the very high weed content of home grown unmachined seed. It is hoped that this

addition to the station's reports may be helpful in dissuading farmers from sowing home-grown unmachined seeds, a practice which cannot be too strongly deprecated.

TABLE I.
Analysis of Samples Tested.

Kind of Seed.	Per cent. of Total.
Ryegrass	59
Other Grasses	8
Flax	16
Clover	8
Cereals	2
Roots, vegetables, etc.	7

The figures in Table I correspond closely to those for previous years, ryegrass tests alone being in excess of the total for all other kinds; vegetables, however, occupy a somewhat more prominent position than heretofore. This is to the good. Users of vegetable seeds do not make sufficient use of the station, and an examination of the packeted vegetable seeds on sale during spring showed that the quality of seed contained was not to be depended on. In some cases seed was found to be entirely dead.

Table II is a digest of results of the season's tests, showing average and modal figures for the more important species. In no case where the total for a species is less than one hundred have modal figures been included. All figures set out in the table are based on tests by the "Continental" system.

TABLE II.
Showing survey of results given by chief species.

Species.	No. in Average	Purity					Germination			
		Mode	Average %	Injurious Weeds No. of Samples containing:—		No. of Samples containing Ergot	Mode percent. 1927-1928	% Average	Hard Seed %	Average of mode or seasons 1923-1927
				Over 1%	Over 2%					
Per. Ryegrass	639	98.3	93.2	...	215	69	83	83	...	87
Italian „	279	98.8	95.5	...	89	11	78	78	...	84
Mixed „	86	97.7	94.2	...	39	5	...	77	...	84
Crstd. Dogstail	35	—	96.1	...	3	7	...	84	...	...
Red Clover	66	96.5	94.0	...	...	1	...	85	4	90
White Clover	19	—	96.3	2	...	...	...	85	7	...
Wild White „	33	—	92.1	1	...	2	...	80	9	...
Alsike	31	—	93.8	...	...	1	...	86	5	...
Flax	364	98.7	98.1	...	...	...	85	81	...	90
Timothy	17	—	93.4	...	...	4	...	95	...	...
Cocksfoot	34	—	88.6	...	...	...	...	85	...	...

Note—The "modal" figure is that which occurs most frequently in a series. Thus in the table flax showed a germination of 85 per cent. more frequently than any other figure. The "mode" thus reflects the general quality of seed obtainable more accurately than does the "average."

Examination of the figures in the above table reveals somewhat lower purity and germination figures than for the previous season. The harvesting of ryegrass was conducted under unfavourable conditions, and this is reflected especially in the lower germination. The modal germination of perennial ryegrass was 83 per cent., or 4 per cent. lower than the average mode for the four previous seasons. Hitherto purity "modes" have not been included in the table, but comparison of "average" purity figures shows that ryegrass quality was also slightly inferior in this respect. Germination figures so far obtained support the belief that perennial ryegrass seed of much better quality will be available as a result of the more clement conditions prevailing at this year's harvest. Tests of Italian to hand do not confirm earlier expectations, but it is expected that seed of average quality will be procurable.

Figures for clovers in general were also below average by reason of the difficulties attending harvest in England. Wild white, particularly, was short in supply and of poor quality.

Flax samples on the market were in the region of 5 per cent. lower in germination than usual. Dutch seed was inferior in quality owing to the bad harvest, and only a limited supply was available. The figures are also depressed by the high proportion of English grown samples tested.

International Seed Testing Association.—The usual referee tests upon samples circulated by the Association were performed with satisfactory agreement in results, especially as regards those found by the various British seed testing stations. The work of the sampling committee of the Association was continued. The head of the division attended, as the Ministry's delegate, the fifth International Seed Testing Congress, held during May, 1928 at the International Institute of Agriculture, Rome, and presented his report, as convener of the sampling committee of the Association, on the past four years' work. A suggestion made by the head of the division, was put forward by the convener of the Educational Committee, for periodic transference of junior officers between official seed testing stations for the purpose of unifying methods.

Congress of British Seed Analysts.—The head of the division attended the sixth annual conference of British seed analysts, held at the National Institute of Agricultural Botany, Cambridge, in July, and acted as external examiner to the Institute for the annual certificate examination for professional analysts.

Advisory Work.—It is gratifying to report that the number of enquiries pertaining to the management of pastures and to the choice of good seeds mixtures is on the increase. County agricultural instructors are making progress in their propaganda in this connexion, and there seems a distinct indication of desire on

the part of agriculturists to improve the grass lands of the province. In view of the importance of our live stock, depending largely upon grass land, this is looked upon as an important advance. Advice was also given upon weed eradication, poisonous plants, cultivation of medicinal crops, production of fodder for caged game, selection of strains for seed production, plants for reclaimed land, methods of destroying herbage on railways, and similar matters. Interesting results have been obtained by a railway company, who called for the advice of the department upon weed destruction by the use of sodium chlorate solution, a chemical not previously so used in this country, though it has been employed on the continent of Europe.

Research.—More time than usual has necessarily been devoted to routine work in order to ensure the satisfactory establishment of the new seed testing station; practically no "slack season" was experienced, and little laboratory research has been possible. Field experiments have, however, been continued.

Shipping of Seed.—The hypotheses set out in the previous report, built upon observation of actual shipments, have been tested in the laboratory by carefully controlled "voyages" of small bulks. The results support the tentative explanations previously offered. A meeting was arranged between the head of the division and his American collaborator, and accumulated results were discussed. It is proposed that each collaborator shall publish separately the results obtained.

Weeds.—Experiments on weed destruction by the use of sodium chlorate are mentioned in an earlier paragraph of this report. It is proposed to make more extensive trials. Experiments to determine capacity of weeds for spread by seed have received considerable attention during the season, and are being pursued.

Seeds Mixtures.—A series of trials, designed to ascertain the competition value and the effect in mixtures, of a number of prominent species, were laid down in 1927 at a number of centres distributed through the province. These were repeated during the past season at other centres. Some results are already emerging. Trefoil has everywhere failed entirely in the hay crop, suggesting that lime demanding species are unlikely to pay for sowing; red clover in the north of county Down has proved so rampant as to suppress practically all species sown with it; Meadow foxtail has nowhere been appreciable in the hay year, even though heavily sown.

Wild White Clover Strains.—The earlier of the trials for comparison of pasture values of strains of English, Irish and New Zealand origin, sown down during the past three seasons are now maturing, and a careful inspection has this year been made at a number of the centres. It may be noted tentatively that out of seventeen trials examined, distributed over four counties, one case

only was seen where New Zealand seed gave pasture results in any way comparable with British strains. It appears from evidence so far accumulated that the New Zealand strain is nearer to the cultivated "Dutch" clover in type and behaviour than either of the others. All factors considered, there appears, so far, little to choose between the English and Irish products.

Red Clover Strains.—A series of plots laid down at three centres in 1927 to compare hay and turf values of English late-flowering, Swedish late-flowering and Montgomery red clovers showed, in the hay year interesting and divergent results. In county Armagh the Swedish clover was for practical purposes a total failure, English seed gave the most profuse growth in the hay, but the general appearance of the aftermath was in favour of the Welsh.

In county Down, where conditions are peculiarly favourable to heavy clover development, all the late-flowering strains developed too heavily from the grass seed growers' point of view, and thus compared unfavourably with broad red types.

It is proposed to extend and repeat this series. In Antrim, Montgomery was judged distinctly the best of the strains tested, Swedish being second, but some way behind.

New Crops.—Cocksfoot seed was successfully threshed and marketed from one centre. Difficulty is being experienced from weeds at a second centre sown later.

An experimental crop of fullers' teasels matured in county Armagh, but in spite of a fairly good summer a high proportion of the heads were diseased. Egyptian clover trials failed.

Plant Diseases.

Advisory Work.—The number of diseased plant specimens sent in for examination and report during the season 1927-1928 was approximately the same as for 1926-1927. On the whole, the diseases dealt with were more obscure than those reported on in former years, a fact which may indicate that the more typical diseases of crop plants and the methods adopted to bring about their control are becoming better known. The condition in which specimens have been received for examination shows an improvement in the season under review. The cases dealt with represent the whole range of cultivated plants, a very large proportion being concerned with potatoes, cereals, fruit, flax and vegetables.

The usual large number of specimens of gooseberry leaves and berries affected with "Gooseberry Cluster Cup," a disease caused by a rust fungus, which forms bright orange-red patches on the attacked organs, was received. It may be mentioned here that on account of the bright colour produced, the disease is striking to the eye, and appears to be more serious than it is in reality. No direct control measures are known, but inasmuch as the disease may be

carried through the winter on the leaves of certain sedges, good cultivation and improved soil conditions will help to keep it in check.

The occurrence of " smut " in oats has been more common than usual, and is a problem to which it is hoped to devote attention in the coming season. Meanwhile, it should be noted that the most satisfactory control of this disease is obtained by dressing the seed with formalin, which may be purchased from any chemist, and which should be of 40 per cent. strength. The correct dilution for dressing seed oats is made by adding one tablespoonful of formalin to one gallon of water. The seed is heaped on a clean floor and sprinkled with the solution, the grain constantly being turned with a shovel to ensure that it is evenly wetted, and to prevent the liquid from collecting in pools beneath the heap. About $1\frac{1}{2}$ gallons of the solution should be sufficient for 4 bushels ($1\frac{1}{2}$ cwt.) of seed. After treatment the heap of grain should be covered with bags, previously wetted with the solution, and left for 4 hours. It should then be spread over the floor in a thin layer to dry, and sown as soon as possible afterwards.

Pink rot of the potato was more prevalent than usual in 1927, a condition probably due to the wet weather which prevailed during autumn, when a number of crops in certain districts were flooded.

Potato Diseases.—Ordinary or Late Blight (*Phytophthora infestans* de Bary.) During the season an account has been prepared for publication of the work done on wet spraying versus the dusting of the crop with a fungicidal powder in order to prevent blight. Consistently better results have been obtained by wet spraying, and dusting cannot be recommended except in very extreme cases where water for spraying purposes is not available. It is hoped that the account of this work will appear in the second volume of the Ministry's Journal. A short account of the disease, together with the most recent recommendations dealing with its control, will be found in the Ministry's leaflet No. 50.

Pink rot (*Phytophthora erythroseptica* Pethy. and Murphy) has been the subject of investigation, and work on this disease has been carried out both in the laboratory and in the field. A number of experiments, designed with the object of testing the susceptibility or otherwise of lately introduced varieties of the potato to the disease, have been almost completed, and it is anticipated that a written account will be available shortly. Among other points being investigated are the study of the growth of the fungus in artificial media, the mode by which the disease is carried on from season to season, and the method of its spread during the season. It is also hoped to make a study of the conditions which favour the occurrence of the disease in epidemic form in the field.

Flax Diseases.—The investigation into the nature and control of seed borne diseases of flax is still receiving attention, but owing to the pressure of other work the headway made in this branch of research has been slower than that desired.

Fruit Diseases.—Further experiments have been carried out dealing with the control of American gooseberry mildew (*Sphaerotheca Mors-uvae* Berk.), and an account of the work is almost ready for publication. Exhaustive tests have been made with washing soda used at various strengths, and its use as a fungicide for the disease in general cannot be recommended. It still, however, remains as the best substitute in summer for polysulphide sprays when dealing with varieties of the gooseberry, the foliage of which is injured by the latter type of spray fluid. Satisfactory results were obtained in 1928 by dusting the bushes of the variety Whinham's Industry with finely ground sulphur. Full details concerning the control of this disease will be found in the Ministry's leaflet No. 49.

The number of experiments dealing with the spraying of apple trees, chiefly to investigate the best means of controlling apple scab (*Venturia inaequalis* Aderh.) has been increased, and results of the greatest importance to apple growers have again been obtained. The very great superiority in both the quality and the quantity of crops yielded by sprayed trees against those yielded by unsprayed trees has now been shown in a number of orchards and over a period of five seasons. It cannot be too strongly emphasized that if a grower is to produce fruit of the best quality and to compete in the open market, then he must give his trees every attention, and be prepared to spray as often as may be necessary. An account of the work which has been in progress for the past four seasons in connexion with the control of apple scab will be published in the second volume of the Ministry's Journal. The Ministry's leaflet No. 33, which deals with this subject, has been revised, and should be consulted for the details of the spraying of apple trees.

A large crop of good fruit was obtained from nearly all the experimental orchards in 1928, and the experiment when completed is likely to provide data of considerable economic importance. Among the problems under investigation are those dealing with the most satisfactory strengths of spray fluid which may be used, the number of sprayings necessary and the time at which they should be carried out; the use of freshly burnt lime, air-slaked lime, and lime from different sources, in the preparation of the spraying mixture; the effect of the addition of substances such as sugar or glue to the spray fluid.

Results obtained from these experiments so far have shown that, with reasonable care, apples of the first quality can be produced, and the next step lies in the development of a better system of marketing.

Spring Frosts.—The occurrence of severe late spring frosts in 1926 and 1927 stimulated the prosecution of an investigation into the possibility of avoiding the damage caused by them to apple blossom. A commencement was made in 1928, and an alarm thermometer, designed to operate an electric bell when 2 degrees of frost were registered, was fitted up in an orchard which had suffered heavily from frost in 1926 and 1927. Heating equipment, consisting of buckets containing Diesel oil which could be ignited at a moment's notice, was arranged over an acre of the orchard, and one or two preliminary trials were made during April and May. The technique used proved to be quite serviceable, and it is hoped to explore the problem fully next season.

Vegetable Crops.—Celery leaf blight (*Septoria apii* Bri. and Cav.) has again been extremely prevalent, and growers should note that a successful measure of control has always been obtained when the following precautions were taken:—The steeping of the seed in formalin or in hydrogen peroxide, although a desirable precautionary measure, may not completely kill the fungus present, and whether the seed has been steeped or not the succeeding crop must be sprayed. If the disease appears in the seed bed or the frame, any diseased seedling should at once be removed and burnt, and the plants sprayed. After planting out in trenches, the crop should be sprayed in early July, whether the disease has appeared or not, and further sprayings should be carried out until the end of the growing season, the number of sprayings given depending upon the severity of the outbreak of the disease, which in turn will be influenced by the prevailing weather conditions. The spray fluid used should be 2 per cent. Burgundy mixture in the proportions of 8 pounds of copper sulphate or bluestone, 10 pounds of washing soda crystals and 40 gallons of water.

Demonstrations.—In conjunction with the horticultural officers of the Ministry and the instructors in horticulture for the counties of Armagh and Antrim, public demonstrations were arranged in apple orchards where experiments are in progress. These demonstrations were, on the whole, well attended, and as a result more growers have sprayed their trees in 1928. There is, however, a great deal of room for improvement, and it is hoped that as a result of the increased number of demonstrations held in 1928, a large proportion of growers will spray their trees in 1929. The necessity for employing the most up-to-date methods in order to check the ravages of diseases and pests of fruit trees cannot be over-emphasized.

Lectures, etc.—During the year a lecture dealing with the seed-borne diseases of plants was delivered to the members of the Northern Ireland Seed Trade Association, and a paper was read to

the Biological Committee of the Agricultural Education Association on recent work carried out in connexion with the control of American gooseberry mildew.

Plant Breeding Division.

The season 1928 was probably the most inclement yet experienced, and field work was greatly hampered by the adverse weather conditions. The rate of propagation was on the whole very poor, and in some cases small bulks have scarcely been increased at all. On the other hand, the large bulks sent to Strabane for final propagation have every appearance of yielding heavily, though most of the plots were badly laid.

In the circumstances no public demonstration of oats was advertized, though the plots were visited by several bodies of farmers early in the season. A large number of the members of the Agricultural Education Association also visited the station during the meeting of that body held in Belfast last July. A guide book was issued as usual, in which operations at Stormont and Strabane were described and county variety trials and growers of Stormont seed stocks listed.

Oats.

Hybrids were still further weeded out in the search for white-grained, winter-hardy forms, and high-tillering, fine-strawed, spring types. It seems fairly certain that a large number of winter-hardy selections have been identified, and that some of these are already nearing the degree of fixity required in practice. It remains now to verify present indications by one season's further observation and selection, after which further selections will be based on the results of replicate row tests. The material designed to yield spring types was again disappointing, mainly owing to its generally late ripening tendency, accentuated by bad weather conditions.

The checker-board tests of the previous season were repeated, but were badly beaten down before harvest. Very little can be done to protect a checker-board test against these disasters or to ameliorate their effects. From this point of view replicate row tests are infinitely more satisfactory, since all rows are easily accessible, and storm damage can as a rule be repaired sufficiently well to ensure that results will still be obtainable.

The replicate row trials were also repeated, a number of new varieties being introduced. None of the varieties originally included will be dropped until after the third year of testing, but new varieties will be included as they appear. A certain amount of damage was done to portions of the trial by rabbits in the spring and by small birds when the grain began to ripen, but the greater

part of the results accruing will be of value. To prevent a recurrence of the damage caused by rabbits the whole field has since been enclosed by wire netting. In all, over 500 of such test rows were sown.

Thirty varieties of oats were carried on to the "garden" plot stage, and fifteen to the "field" plot degree of propagation, while ten varieties were grown at Strabane as "extension" plots prior to distribution or use in county variety trials. Some of these "field" plots for which there was not sufficient accommodation had to be placed in a small additional field rented for this purpose. This is not very satisfactory, but no other arrangement was possible, as no field near at hand is available.

The varieties which have now reached the extension plot stage are: Potato, Clemrothery (an alternative form of Potato), Sandy, Tyrone Tawny, Victory, Crown, King, Golden Rain, Supreme x Victory and Black Potato x Victory. Supreme x Victory is an early-ripening oat of the Victory type which may prove useful in the most northerly districts. Black Potato x Victory is a stiff-strawed oat of the Victory rather than of the Potato type. It is hoped that this oat will be of value wherever there is danger of lodged crops.

Flax.

The series of trial plots previously described was continued, this being the third season. The trial was enlarged this season to include four new varieties bred by the Linen Industry Research Association, seed of which was very kindly supplied by that body. These varieties are additional to "J.W.S.," which has been included as a standard from the inception of these tests. Fairly accurate comparisons amongst the varieties originally included will be possible when the data from this season's trials are assembled, and some of the varieties will be discarded as unpromising. The data will be published in due course.

Propagation of the most promising varieties as revealed by the trials was continued successfully. The later stages of propagation were this season transferred to the east coast of England with greatly improved results as shown by the rate of increase obtained.

Animal Diseases Division.

The past year witnessed a further and very substantial expansion in the work of this division, a considerable increase having again to be recorded in the number of inquiries and specimens received. Requests for information regarding the prevention of disease were more numerous than in any previous year, and there was abundant evidence of the interest of farmers in this direction.

4,712 specimens were received in connexion with advisory and research work, as compared with 1,633 specimens submitted during the year 1926-27. There still remains, however, room for improvement in the method of sending material for examination. In many cases no information was supplied regarding the specimens, and commonly the material was decomposed or dispatched in dirty containers, so that bacteriological examination was hindered or entirely prevented. Sufficient advantage has not yet been taken of the scheme whereby sterile bottles and tubes may be obtained free of charge from the division.

1,002 doses of vaccine against contagious bovine abortion and other diseases were prepared, as compared with 503 doses in the previous year. There was a certain demand for killed abortion vaccine, but its use was not encouraged by the division.

Bovine Diseases.

The results of examination of 566 specimens were as follows :—

<i>Disease.</i>	<i>Positive.</i>	<i>Negative.</i>	<i>Total.</i>
Tuberculosis, Milk Samples ...	23	165	188
Tuberculosis, Other Specimens ...	4	7	11
Contagious Abortion, Blood Samples	57	224	281
Anthrax	0	4	4
Miscellaneous	—	—	82

566

From the foregoing figures it will be noted that tubercle bacilli were found in 12.3 per cent. of the milk samples submitted. The majority of the samples were from cows suspected to have tuberculosis of the udder. 11 samples, which were negative on microscopical examination, were tested by animal inoculation, the results being again negative in all cases. This agrees with the results obtained last year, and indicates that microscopical examination alone is a very accurate method of detecting tubercle bacilli in specimens.

The blood test for contagious abortion gave a positive result in 20.3 per cent. of cases.

While udder troubles were less prevalent than in the previous year, there was a serious increase in the amount of fluke. Hoose and coccidiosis also were more common than usual. The latter disease is easily recognized by the presence of a blood-stained diarrhoea. It is specially important that affected cattle should be placed in houses which are cleaned out at least every second day, in order that the causal parasite may not have time to hatch in the dung and to re-infect the animals.

During the winter an investigation was carried out regarding contagious abortion and sterility over a wide area in county Fermanagh, where serious losses were reported to occur. 118 cows were tested for contagious abortion, and of these only 7 showed evidence of present or recent infection. The position regarding

barrenness was also unexpectedly favourable, as on investigation it was found that less than 10 per cent. of the cattle failed to hold service. Any sterility amongst cows was found to be due to chronic inflammation of the womb, to which reference was made in the last annual report. The method of treatment advocated therein had been applied by a local veterinarian to 384 cattle, 90 per cent. of which recovered. Similar good results were obtained in other parts of Northern Ireland. In response to inquiries information regarding the treatment of sterility was sent to several other countries.

The division was consulted regarding 15 cases of suspected poisoning. The losses in the majority of cases were referable to specific disease. Arsenical sheep dip was involved in three instances, including one case where six cattle and one pony died through contamination of the drinking water.

Sheep Diseases.

Only 18 specimens were received, mainly of fluke and sheep scab. As anticipated in the last annual report fluke was very prevalent, but serious losses were not experienced, as dosage of the sheep was widely practised. Several notices were issued to the press regarding the prevention and treatment of the disease. Carbon tetrachloride continued to give excellent results, and was generally preferred to male fern extract. The former drug is unsuitable for cattle, and should be used with caution when sheep are receiving extra feeding.

Experiments carried out in Antrim in 1925-26 clearly showed that vaccination is an effective method of controlling braxy. Since then inoculation has become the general practice, and there has been a marked reduction in losses from the disease. Vaccination should be carried out not later than the third week in September. If it is delayed till night frosts occur, there is a risk of bad results. Where, owing to unforeseen circumstances, sheep have been injected later in the year, they should be penned at night, and given a little hay before being released on pasture. This precaution should be observed for at least ten days after giving the second dose of vaccine.

The experiments regarding "headles" carried out last year were repeated, with similar results. The flowers and leaves of bog asphodel, the weed suspected to cause the disease, were forcibly fed to sheep without affecting their health. Attempts to transmit the disease to healthy sheep by contact and by inoculation again failed. It was concluded that bog asphodel is not poisonous to sheep, and does not cause "headles."

Pig Diseases.

28 specimens were received, chiefly pigs affected with "blows." Research work was continued on the non-parasitic type of this condition, but animal experiments were not possible owing to the absence of accommodation for pigs. While useful information was obtained regarding the value of certain treatments applied on farms, it was not deemed advisable to conduct critical investigations

in the field owing to the difficulty of controlling the many factors operative in problems of this nature. A considerable amount of time was devoted to a study of the blood in non-parasitic "blows," and the work of MacGowan, that a profound anaemia is invariably present, was confirmed. A paper has been prepared on the subject.

Poultry Diseases.

Table showing the results of examination of specimens :—

Disease	Antrim	Armagh	L'derry	Down	Ferman- agh	Tyrone	Other sources	Total
B. W. D. Chicks	16	38	7	68	0	12	3	144
B. W. D. Blood Samples	476	486	1118	1280	0	116	0	3476
"Blackhead"	0	1	1	3	1	7	0	13
Coccidiosis	19	13	0	38	7	9	0	86
Fowl Typhoid	0	0	0	2	0	0	0	2
Gapes	0	0	0	55	0	0	0	55*
Roup	0	1	0	3	0	0	1	5
Tuberculosis	2	0	0	7	0	0	0	9
Miscellaneous	28	48	27	119	5	47	6	280
Total	541	587	1153	†1575	13	191	10	4070

* Includes wild birds

† Includes specimens from the Ministry's Laying Test

Bacillary white diarrhoea was confirmed on 56 farms, as compared with 67 farms in the previous year. The blood-testing scheme embraced 31 flocks, and at the end of the year under report 4,044 birds had been tested. 33.7 per cent. of females gave a positive reaction, while only 8.2 per cent. of males were found to be affected. The expansion of this work was largely due to the enthusiasm of the county instructors in poultry-keeping.

The scheme offers the best solution to the problem of bacillary white diarrhoea, but good results can be obtained only if those participating in it carefully observe the conditions detailed in the appendix to the last annual report. Testing should be carried out at intervals of six months until no further reactors appear, and thereafter annually. A single flock test is useless, and a waste of time for all concerned. There was a general misconception regarding the building up of a flock guaranteed free from the disease. No flock can be so described under the scheme unless all the birds, including the non-breeding stock, are tested and the other conditions are satisfied.

Investigations were carried out during the year regarding methods of blood-testing for bacillary white diarrhoea. 1,705 experimental tests were made in this connexion.

Five pens, containing "carriers" of bacillary white diarrhoea and healthy birds, were assembled to study the spread of infection amongst adults. The pens were maintained for six months. A

second series of pens was assembled to check the results obtained from the first experiment. An investigation is in progress to determine if infection passes from hen to chick through the droppings.

A new method of vaccination against fowl typhoid was tested on a farm where heavy losses were being experienced. 360 birds were inoculated, while 100 birds were left as controls. The results were encouraging, and the experiment will be repeated as opportunity affords.

The investigation on "gapes" in wild birds was concluded. 254 rooks were examined over a period of five years. It was found that approximately 98 per cent. of these birds harbour gapeworms in the month of May, the time of the year when chickens first become infested. A controlled experiment showed that the rook gapeworm can attack chicks. Rooks are thus an important potential cause of loss to poultry farmers. The experiment is described in a paper now in the press.

A study was made of tumours of fowls during the year. These were found in 45, or 9.78 per cent., of 460 adult birds examined, including 59 pullets from a laying test. The incidence amongst the latter was 22.0 per cent., and the genital organs were mainly involved. Whereas in mammals susceptibility to tumour formation increases with age, this investigation showed that the incidence of tumours amongst young birds specially bred for egg production was more than twice that amongst average adult fowl of all ages. The observation suggests that high egg production in pullets predisposes to the growth of tumours. Microscopical examination showed that lymphomata and sarcomata are the commonest tumours of domesticated birds. A paper was prepared on the subject.

Miscellaneous Diseases.

27 specimens, representing diseases of horses and small animals were received. Several inquiries related to the control of coccidiosis in commercial rabbitries.

General.

The staff continued to be responsible for the teaching of veterinary hygiene in connexion with the Faculty of Agriculture of Queen's University of Belfast.

12 lectures and demonstrations were given during the year to branches of the Farmers' Union and other agricultural bodies. On the invitation of the Royal Institute of Public Health, the head of the division addressed their Annual Congress on animal parasites. 116 visits were made by the staff during the year. The laboratories were visited by about one thousand persons during this period.

Publications:—

1. "Animal Parasites of Livestock of Importance in Public Health." J. P. Rice. Proceedings of the Royal Institute of Public Health, 1928.

2. "*Poultry Diseases.*" J. P. Rice. *Veterinary Journal*, Vol. 84, September, 1928.

Poultry Division.

The inauguration of the Empire Marketing Board's poultry research plant at Hillsborough necessarily resulted in a temporary slowing down of experimental work at Stormont. The pens at Stormont can house only small groups of birds, and as a consequence all experiments have to be repeated several times before reliable conclusions can be drawn.

No growth experimental work with chickens was carried out this year, but the five experiments with laying birds in progress last year have been continued.

Feeding Experiments with Laying Birds.—In all five experiments have been in progress at Stormont. The first of these experiments was designed to compare the relative value of various types of protein (albuminoid) rich feeding-stuffs for egg production. The results over a period of two years are summarized in the following table:—

Group	Source of Protein	1926-27		1927-28	
		Average egg yield per bird	Per cent. second grade	Average egg yield per bird	Per cent. second grade
1	Linseed Cake Meal ...	162.8	11.4	114.57	3.7
2	Gr. Nut Cake ,, ...	180	21.9	115.12	9.0
3	Extr. Soya Bean ,, ...	182.25	28.1	123.5	13.2
4	Sunflower Seed ,, ..	171.37	19.2	115.5	2.2
5	Fish Meal	198.29	30.0	121.7	16.3

During the second year of the experiment there was practically no difference in the egg yield for the various groups. In the first year, fish meal, extracted soya bean meal, and ground nut cake meal gave superior results to linseed cake meal, although in view of the small number of birds (eight) in each group it is not desirable to attach much weight to the differences until the results have been confirmed by a repeat experiment. It is, however, worthy of note that as egg production in the several groups increased, the percentage of second grade eggs was also higher, and that the fish meal group laid the largest percentage of second grade eggs. This tendency has been noted in previous experiments, and in view of the experimental work carried out at Stormont on the effect of feeding on the size of the egg (see *Journal of the Ministry of Agriculture, Northern Ireland*, Vol. II) the conclusion has been drawn that a ration containing 10 per cent. of fish meal does not contain sufficient mineral material for pullets capable of laying over 160 eggs in their

pullet year. The standard mash used in the Stormont laying trials has therefore been modified by the addition of 2 per cent. of a mineral mixture to the mash.

The second laying experiment, which was commenced in 1926-27 with the object of ascertaining the effect on their subsequent egg production of the ration upon which the chicks were reared, has also been concluded. The results were of a most interesting character, but as the work is being repeated on a much larger scale at Hillsborough it is not desirable to comment upon them until the Hillsborough experiment is completed.

A repetition of the previous experiment in which small doses of iodine were fed to groups of three-year-old birds was concluded. The results confirmed those of the first experiment, namely, that no increased egg yield was obtained by feeding iodine in the form of potassium iodide to birds of this age.

The fourth experiment, which commenced in October 1927, was designed to ascertain the effect on egg yield and periods of broodiness of feeding mashes containing varying proportions of maize meal. No conclusion can be drawn until the second year's results are available.

A number of demonstration experiments were also carried out, and the birds and results exhibited at the Royal Ulster Agricultural Show. Great interest was taken in these demonstrations at the show, and it is proposed to expand this phase of the station's activities next year.

Laying Test.—The Ministry's sixth Stormont laying test, which finished on 15th September, consisted of 91 pens of pullets, an increase of 19 pens compared with the previous year. Each pen consisted of six pullets. There was a slight decrease in the average number of eggs laid per pullet, the figure being 183.84 eggs, compared with 189.19 for the previous test. The decrease in average egg production was due partly to a few pens of poor layers and partly to the severe weather conditions experienced during the winter months. A slight improvement in the size of the eggs laid was recorded. Out of a total of 91 pens, 27, or 29.6 per cent., were disqualified for producing more than 300 second grade eggs, compared with 25 pens out of a total of 72, or 34.7 per cent., last year.

The silver cup, presented by the Ministry for the pen of pullets producing the highest market value of eggs during the period of the test, was again won by a pen of White Wyandottes, the property of a station-holder under the county Down committee of agriculture, this being the first occasion on which the Ministry's challenge trophy has been won by the same competitor for two years in succession. A pen of White Wyandottes, the property of a station-holder, also won the Ministry's winter egg prize and the Silver Challenge Cup presented by the Scientific Poultry Breeders' Association, as well as the silver medal offered for the best pullet in the test.

The White Wyandotte breed has thus, for the second year in succession, secured all the championship awards. It is highly satisfactory to be able to record that all the championship awards have been secured by competitors who were station-holders under the county scheme. This is encouraging, because it is evidence not only of the soundness of the station-holders' scheme, but of the intelligent keenness and interest which the station-holders are showing in the development of this industry, and of the Ministry's scheme in particular. The purpose of the Ministry's egg-laying trials at Stormont is not to organize a competition between breeds and breeders. Its very definite object is to ensure that there shall go back to the various breeders a group of birds, each possessing a very definite recorded pedigree for egg and size of egg production, from which they will be able to breed with enhanced prospects of improving the quality of their own stock and that of the numerous poultry-keepers to whom they sell hatching eggs. The Stormont test is also, perhaps, the only means by which the Ministry can ascertain what type of progress is being made by the progressive breeders. It is, so to speak, the pulse of the producing industry. For example, the data collected during the past five years has brought to light the fact that numbers of eggs are being obtained at the expense of size, and the conditions of the test were therefore modified last year in several important particulars so as to disqualify all birds laying a certain proportion of eggs below the standard weight.

The following table gives a comparison of the number of pens for each county entered in the test over a period of six years :—

	1922-23 Pens.	1923-24 Pens.	1924-25 Pens.	1925-26 Pens.	1926-27 Pens.	1927-28 Pens.
Antrim	3	16	17	11	13	22
Armagh	9	12	19	19	10	10
Down	23	34	24	29	24	32
Fermanagh	1	2	2	2	4	5
Londonderry	3	2	3	2	5	10
Tyrone	6	5	7	8	16	12
Totals	45	71	72	71	72	91

It is evident that an increasing interest in the Stormont test is being taken by breeders.

A comparison of a number of interesting particulars, some of which bear directly on the economic aspect of this industry, is tabulated below.

48 weeks ended	No. of pullets penned	No. of eggs laid	Average No. of eggs per bird	Average value of eggs per bird	Cost of food per bird	Average price of eggs per dozen	Gross return per bird over cost of food
				s d	s d	s d	s d
16th Sept., 1923	270	51,025	188.98	32 6.9	9 10	2 0.8	22 8.9
15th Sept., 1924	426	77,383	181.6	33 0.5	9 10.25	2 2	23 2.25
16th Sept., 1925	432	78,565	181.86	31 10.7	10 1.6	2 1.2	21 9.1
16th Sept., 1926	426	80,798	189.66	30 6.64	10 1.8	1 11.1	20 4.84
16th Sept., 1927	432	81,732	189.19	26 9.2	10 2.2	1 8.3	16 7
15th Sept., 1928	546	100,378	183.84	26 4.28	10 2.1	1 8.64	16 2.18

It will be observed that during the past six years the cost of feeding the hen has steadily risen, whilst the value of her produce over the cost of feeding has declined—another example of a steady increase in the producer's raw material, and a decline in the value of the finished article. It illustrates one of the difficulties with which the agricultural producer has to contend, and indicates the necessity for stimulating consumption by consistently marketing eggs of the highest quality only.

Preparations have been made for the sixth test, commencing on the 16th October, 1928. Additional pens have been provided to accommodate the increased entries received.

7. SPECIAL HORTICULTURAL EXPERIMENTS.

Black Currant Mite.—This experiment was extended to include an additional centre in county Down. Progress at the two centres now established appears to be satisfactory, but no definite recommendations can yet be made as to the efficacy of the methods in use.

Capsid Bug Experiments—Apple Trees.—These experiments were also extended to include two new plots, making a total of four plots, all of the variety "Grenadier." As in previous years the sprayed trees produced, in every case, decidedly bigger crops and cleaner fruit than the unsprayed trees. As regards the different kinds of washes used, the crop from the plot sprayed with nicotine and soft soap was freer from damage by capsid bugs than that from any other plot. The next best result was obtained on the plot sprayed with nicotine sulphate and soft soap. Although the difference between the crops on those two plots was not very marked, the difference in the cost of spraying materials would be considerable in the case of extensive orchards, nicotine being very much more expensive than nicotine sulphate.

Capsid Bug and Apple Scab Experiments.—In the experiments with "Bramley's Seedling" and "Lane's Prince Albert" in which a combined spray is in use for the control of capsid bug and apple scab, results continue to be satisfactory. This experiment is now in its third year, and in each season so far the combined spray has had the effect of improving the crop and reducing the damage done by these pests.

The experiments are being continued.

It should perhaps be mentioned that the weather during the summer and autumn of the past year favoured the spread of apple scab, and thus helped to spoil the fruit on unsprayed trees. This factor operated to emphasize the excellence of the crops on the sprayed trees.

Ovicidal or Egg Killing Washes.—Eighteen brands of commercial washes were used in 1927/1928 as against sixteen in the previous season. The results vary—some being good and others very disappointing. In some cases application of the wash did not appear to have had any material effect either in destroying the eggs of apple scab and apple aphides, or in cleansing the bark of the trees. On the other hand, some four or five brands have again proved to be effective and quite reliable in use.

Manuring of Apple Trees.—This experiment is being continued, but is necessarily slow in operation, and some years must elapse before definite results can be expected.

Poultry in Orchards.—Owing to unforeseen circumstances, this experiment, which was carried on until the autumn of 1928, had to be abandoned. It is hoped, however, to re-commence investigations later on at another centre.

8. MARKETING.

Eggs.

The past year in the egg trade may be regarded as a period of consolidation of our position in the British markets, and as, in the last analysis, all efforts for the improvement of the poultry industry at home must be measured by their effect on the export trade, the year's work may be regarded with satisfaction. Maintaining the standard of excellence in exports has, however, resolved itself into a task of close supervision on the part of the Ministry, for, while the majority of traders appreciate that quality is the best advertisement, there are yet a few against whom the Ministry has had occasion to avail itself of the machinery of the law to secure compliance with the regulations.

Testing.—During the year inspections, particularly those of consignments in transit, have shown that exporters realize the importance of freshness. One or two complaints were made, but investigations proved that special difficulties, such as abnormally warm

weather or temporary unsettlement of the market, had been experienced by wholesale dealers. There was reason to believe, however, that although the export standard was improved, the quality of many eggs sold in home markets was far from satisfactory. Special attention is now being devoted to supplies for local sale, but it is obvious that there are still too many stale eggs in circulation. Much of the trouble is due to the presence of the fertile egg, which deteriorates in quality very rapidly. Special efforts were made during the year to bring home to the producer the necessity for segregating male birds from flocks when the eggs were intended for human consumption. The importance of this matter was given wide publicity in rural districts by poster and handbill, but further efforts are essential if the proportion of unsuitable eggs is to be reduced.

Grading.—Absolute perfection in grading has not yet been attained mainly because of the desire on the part of exporters to include a proportion of eggs too small for the grade. The main problem is the disposal of the 14 lb. grade, but changes are foreshadowed in the British market which should lead to improved conditions for the sale of this grade.

Cleanliness.—In general, the standard of cleanliness of eggs has given reason for satisfaction. The Ministry has dealt firmly with contraventions of the conditions on this point, and on the whole a marked improvement has taken place.

Purchase by weight.—The regulations as to purchase by weight have, generally speaking, been complied with, though some complaints have been received. Offences of this nature are difficult to detect, and the Ministry is glad to acknowledge the valuable assistance given by the Royal Ulster Constabulary in this matter. Sufficient evidence was available in a number of cases, and legal proceedings successfully instituted.

Preserved, Cold-stored and Pickled Eggs.—A survey of the local retail market for preserved, cold-stored and pickled eggs shows a decided reduction in quantities offered. Before the Marketing of Eggs Acts came into operation very considerable quantities were disposed of locally, but it would now appear that they were sold under misleading descriptions, as sales have declined following the introduction of the regulations as to labelling on exposure for sale. Meanwhile the quantities deposited in registered premises show no decline, and returns furnished in compliance with the statutory requirements by owners or occupiers of premises indicate that the storage trade for export purposes provides a valuable outlet for the surplus production in the spring. Important developments in the storage trade are dealt with in later paragraphs.

New Proposals.—It is a matter for satisfaction that at the present juncture the trade reputation of Northern Ireland eggs has been so

fully rehabilitated. Market conditions are changing in a direction which promises to add further emphasis to the necessity for compliance with the Ministry's regulations. The agricultural authorities in Great Britain have for many years been concerned with the extent to which the home market has been supplied with imported eggs, and are making determined efforts to secure a greater share of the market for the home producer. The best home produced eggs still command the highest prices, but trade is hampered by lack of organization and by the widespread practice of selling imported eggs under descriptions calculated to promote the belief that they are of home production. Two parallel forces have now been set in motion. For better marketing at home a grading scheme has been promulgated on a voluntary basis in Great Britain, with certain attendant advantages to encourage participation therein. For the protection of the home commodity the aid of the Merchandise Marks Act, 1926, has been invoked. As the steps taken under this Act have important repercussions on the Northern Ireland industry, it may be of interest to set out the position in some detail.

Under the Merchandise Marks Act a Standing Committee was appointed to consider applications from interested parties for the marking, with an indication of origin at the time of importation or sale, of imported articles of agricultural and horticultural produce, etc., and such regulations as might be decided upon are to be embodied in an Order in Council issued under the authority of the Act. An application for an Order in Council to prescribe the individual marking of imported eggs was heard last year by the Committee, which, after hearing evidence from interested parties, reached the conclusion that while the individual marking of imported eggs would be an effective means of preventing misrepresentation, an Order in Council in respect of eggs in shell should be made only when

- (a) sufficient improvement had been made in the marketing of British eggs to remove or, at least, to mitigate the danger of the best imported egg obtaining a better market in the United Kingdom than the average home-produced egg, and
- (b) either the cheap imported egg had become of substantially less importance to the British consumer or international arrangements had been made which would prevent a marking requirement from restricting supplies of this class of egg.

Following these, their principal recommendations, the Committee commented as follows regarding preserved eggs :—

“ During the interval which must elapse while progress is being made on the two lines we have indicated, attention might be given also to the problem presented by preserved and cold-stored eggs. It has been suggested to us, in the course of our inquiry,

that the need for distinguishing between preserved and fresh eggs is not less than that of differentiating imported from home-produced eggs; and that, if a marking Order were made there would, in the absence of such a precaution, be a danger of English preserved eggs being sold as "new-laid," and so damaging the home egg trade. This matter is, we think, not strictly within our province, but we can well believe that the home egg trade would be prejudiced by preserved eggs, whether of home or foreign origin, being passed off as "English new-laid."

The Committee reported accordingly on the 14th October, 1927. Meanwhile the Imperial Ministry of Agriculture and Fisheries had been investigating the possibility of introducing measures for the improvement of the poultry industry at home, and subsequent to the issue of the afore-mentioned report a Bill was introduced in the Imperial Parliament making provision for the grading and marking of agricultural produce generally, and dealing specially with the marking of home-produced preserved eggs. This Bill received the Royal Assent on the 3rd August. Sections 3 and 4 may be briefly summarized as follows:—

(a) *Preserved Eggs.*

After 28th February, 1929, *all eggs which have been preserved by any process must be marked on shell in prescribed manner before sale or exposure for sale.*

Provided that eggs preserved by any process (e.g., cold-storage) where marking of such eggs cannot be enforced may be exempted.

(b) *Cold-stored and Chemically-stored Eggs.*

If and so long as an Order in Council under the Merchandise Marks Act, 1926, is in force, prohibiting the sale or exposure for sale in the United Kingdom of imported eggs unless they bear an indication of origin,

- (i) premises used for cold-storing or chemical-storing of eggs must be registered, and
- (ii) no *British* cold-stored or chemical-stored eggs may be removed from registered premises unless marked on shell in prescribed manner.

It will be noted that cold-stored and chemically-stored eggs of home production must be marked before leaving the store—whereas other preserved eggs of all classes are to be marked on sale or exposure for sale. The reason for differentiation is that whereas there are conclusive tests for eggs which have been preserved in water glass or in lime solution, cold stored eggs are, under certain conditions, not easily distinguishable from eggs which have not been cold stored.

Following the introduction of this Bill in the Imperial House a *second* application for the individual marking of imported eggs was submitted, and on the 1st June last the Agricultural Produce Committee recommended that when the appropriate Department (i.e.,

in this instance the Minister of Agriculture and Fisheries, the Secretary of State for the Home Department and the Secretary of State for Scotland, acting jointly) was satisfied that sufficient improvement had been made in home production, grading and marketing, an Order in Council should be made prohibiting the importation of hen or duck eggs in shell or the sale or exposure for sale in the United Kingdom of imported hen or duck eggs in shell unless each egg was durably marked in ink on the shell with an indication of origin in letters not less than one-sixteenth of an inch in height. The objection, based on the absence of identification of the preserved eggs, to the issue of such an Order in respect of imported eggs was met in Great Britain by the Agricultural Produce (Grading and Marking) Act, 1928, and the undertaking to promote parallel legislation covered Northern Ireland. This undertaking is specifically referred to in the Report of the Standing Committee in the following terms :—

“ It is observed that the Agricultural Produce (Grading and Marking) Bill does not extend to Northern Ireland. We understand, however, that arrangements are being made to secure that eggs produced in Northern Ireland and cold-stored in that country may not be sold in Great Britain unless suitably marked.”

A Bill has now been drafted, for introduction in Parliament during the autumn session, to bring into operation in Northern Ireland provisions as to the marking of all preserved eggs under conditions similar to those initiated in Great Britain. Imported eggs will in future be marked to indicate country of origin, preserved eggs (other than cold-stored or chemically-stored eggs) will be marked as such irrespective of the country of production, and cold-stored or chemically-stored British eggs will be specially marked, so that the only unmarked egg on the market in the United Kingdom will be the fresh egg produced in Great Britain or in Northern Ireland.

Pork.

During the past twelve months there has been considerable development in the direction of the marketing by producers of small weight pigs as pork in the Smithfield Market, London, and in the marketing of live pigs direct to firms at various centres in Great Britain. Co-operative marketing is essential if a full measure of success is to be obtained and the highest prices secured, and the Ministry is glad to record that pig producers in many areas have shown a desire to combine in this matter. Pig Feeders' Associations have been formed in counties Armagh, Fermanagh and Tyrone, each association having branches in various districts in the county. The objects of the association is to keep members informed in advance as to prices and market conditions, to equalize prices in

various parts of a county, to set up central slaughterhouses in different districts, and generally to assist the producer to market his pigs to the best advantage.

Railway Rates and Transit.

Following the recommendations contained in the report dated 15th November, 1927, of the Committee appointed by the Minister of Agriculture to enquire into the Transit, Prices and Markets of Agricultural Produce, arrangements were made for a conference between members of the Government and representatives of the carrying companies to discuss the question of cross-Channel charges on agricultural produce. This conference was held at Stormont Castle, Belfast, on the 25th January, 1928, and after a full discussion of the subject the representatives of the carrying companies promised to give the problem their most careful consideration.

Arising out of a suggestion at the conference a representative of the Ministry was nominated to be associated with the carrying companies in their deliberations, and a meeting was held on the 22nd February at the offices of the Belfast Traffic Committee. The Ministry's representative subsequently attended a meeting of the Irish and English Goods Traffic Conference, held on the 19th April, and placed before the members the case for a revision of the rates applicable to consignments of agricultural produce sent from Northern Ireland to Great Britain. After full and careful consideration, and having in mind the fact that any general reduction in rates from Northern Ireland would involve corresponding reductions in the rates from other places, and that the present financial position of the railway companies would not justify such an all round reduction in rates for agricultural produce, the Conference decided that it would be impracticable to make any special concessions in rates so far as Northern Ireland traffic was concerned.

It is anticipated, however, that it will be possible in the near future for the carrying companies to afford relief to the Northern Ireland agricultural industry in the matter of rates for certain classes of agricultural traffic. Under the Imperial Government's de-rating scheme for the relief of depressed industries the rating relief to railways will be given on condition that it will be passed on in the shape of reduced rates, a proportion of the relief being applied to agriculture. The Government of Northern Ireland has at present under consideration the question of a scheme of de-rating relief on somewhat similar lines for Northern Ireland industries.

During the period dealt with in this report a reduction in the rates charged between particular centres for certain classes of traffic was obtained in a number of instances as a result of representations made by the Ministry to the carrying companies, e.g., substantial concessions were granted in respect of the charges made for the

carriage of (a) seed potatoes from the Ballymena district to Oxford, and (b) live pigs from Londonderry to Birkenhead by direct steamer.

A few instances of damage and delay during transit to consignments of Northern Ireland produce were brought to the notice of the Ministry, and where representations were made to the carrying companies, the latter readily lent their assistance towards the investigation of the complaints and the elimination, as far as practicable, of the possibility of the recurrence of instances of damage and delay.

Marketing Assistance.

The Ministry continued to afford exporters all practicable assistance in the marketing of their produce, and introduced many merchants to reliable cross-Channel buyers.

The Ministry, with the assistance of the Empire Marketing Board, and in co-operation with the Ministry of Commerce, displayed at the British Industries Fair and the Ideal Homes Exhibition, held in London in the spring of the year, exhibits of various kind of agricultural produce from Northern Ireland. Samples of Northern Ireland produce were also shown at several other exhibitions in England. In all cases numerous trade enquiries were received. Apart from the actual trade which resulted, the expense of staging the exhibits was fully justified by the publicity given to Northern Ireland produce.

Merchandise Marks.

The Merchandise Marks Act, 1926, the provisions of section (1) of which prescribe that imported goods bearing the name or trade mark of any British manufacturer or trader must not be sold unless accompanied by an indication of origin, came into force in the United Kingdom of Great Britain and Northern Ireland on the 15th June, 1927. The Act further provides for the setting up of Standing Committees to enquire into applications for Orders in Council requiring the marking of imported goods on sale or exposure for sale with an indication of origin, and during the period under review applications for the marking of the following commodities were considered by the Standing Committee :—

- (i) Honey.
- (ii) Apples.
- (iii) Eggs.
- (iv) Currants, Sultanas and Raisins.
- (v) Oats and Oat Products.

The report of the Standing Committee in regard to the two first mentioned applications was considered by the appropriate department, and an Order in Council requiring

- (a) the marking on sale or exposure for sale in the United Kingdom of any imported honey or any blend or mixture of honey of which imported honey forms part, and
- (b) the marking on sale or exposure for sale in the United Kingdom of imported fresh apples

was duly promulgated. The Order, which was made on the 13th July, 1928, will become effective in Great Britain and Northern Ireland as regards fresh apples on the 14th November, 1928, and as regards honey on the 14th January, 1929.

As regard (iii) an application for the marking of imported eggs was considered last year by the Standing Committee, who reported that it appeared to them to be undesirable that an Order in Council should be made pending, amongst other considerations, an improvement in the methods of marketing home produced eggs. A second application for the marking of imported eggs, dated 25th February, 1928, was referred to the Standing Committee for consideration, and the Committee, in their report dated 1st June, 1928, recommended that :

- (a) " When the ' appropriate department ' is satisfied that sufficient improvement has been made in home production, grading and marketing, an Order in Council should be made prohibiting the importation of hen or duck eggs in shell, or the exposure for sale or sale in the United Kingdom of imported hen or duck eggs in shell unless each egg is durably marked in ink with an indication of origin in letters not less than say one-sixteenth of an inch in height,"

and

- (b) " That an Order in Council should be made prohibiting the importation of dried eggs, or the exposure for sale or sale in the United Kingdom of imported dried eggs in containers unless each container bears an indication of origin."

In view of the bearing which the question of the marking of imported eggs has on the Northern Ireland egg industry, the facts in regard to the two applications for an Order in Council in the matter and the considerations which weighed with the Standing Committee in connexion with the making of their recommendations in the second report are set out in detail at page 53. This report and the reports of the Standing Committee on the applications for the marking of currants, sultanas and raisins and oats and oat products are at present under the consideration of the " appropriate department."

Sale of Food and Drugs Acts, 1875—1907.

The extent of the activities of local inspectors under the Acts during the year ended 30th June, 1928, in regard to samples of milk, buttermilk, butter, margarine and cheese is demonstrated by the following table :—

Nature of sample	Number of samples taken	Number of prosecutions	Number of convictions	Penalties imposed (exclusive of costs)
Milk	2,401	100	57	£86 19 6
Buttermilk	566	39	37	45 13 6
Butter	974	27	24	75 10 6
Margarine	314	4	2	0 13 8
Cheese	251	—	—	—
Totals	4,506	170	120	£208 17 2

There is a slight decrease in these figures compared with those for the previous twelve months. During that period 4,738 samples were taken, 174 prosecutions instituted and 151 convictions obtained, the penalties imposed amounting to £253 13s 0d.

Eight new premises, viz., seven in the county borough of Belfast and one in county Tyrone, were registered during the year under section 9 of the Margarine Act, 1887, and section 7 (4) of the Sale of Foods and Drugs Act, 1899, for wholesale dealings in margarine. As no registrations were cancelled during the year under review there was on the 30th June, 1928, a total of one hundred and fifty-two registered premises in Northern Ireland. These premises are located as follows :—

County Borough of Belfast	...	...	112
County Borough of Londonderry	...	...	10
County Antrim	...	...	11*
County Armagh	...	...	7
County Down	...	...	6
County Fermanagh	...	...	1
County Londonderry	...	...	2
County Tyrone	...	...	3

*Includes one margarine cheese factory.

The premises registered as butter factories under section 1 of the Butter and Margarine Act, 1907, at present number 13, no registrations having been effected or cancelled during the year under review.

Thirty-seven fancy or descriptive names were approved by the Ministry under section 8 of the Butter and Margarine Act, 1907, for use in connexion with margarine. In fifteen cases approval was refused.

9. AGRICULTURAL SCHEMES.

- (a) Poultry-keeping.
- (b) Butter-making.
- (d) Prizes for Cottages and Small Farms.
- (c) Horticulture and Bee-keeping.
- (e) Grants to Agricultural Societies.
- (f) Horse-breeding.
- (g) Cattle-breeding.
- (h) Registration of Dairy Cattle.
- (i) Milk Recording Associations.
- (j) Swine-breeding.
- (k) Sheep-breeding.
- (l) Goat-breeding.
- (m) Creameries.

County Schemes.

These schemes fall into two main categories, namely, (a) schemes aiming at live stock improvement under which sires of a high level of excellence are placed on easy terms with breeders, and (b) schemes of itinerant instruction, the basic feature of which provides for the services of experts to be available in each county to residents requiring advice or assistance in regard to agriculture generally or poultry-keeping, home butter-making and cheese-making, horticulture and the management of bees. The fundamental principles of each scheme operate in each county, but at the same time the schemes are sufficiently elastic to permit of any variations necessary to meet the special needs of a particular county. The schemes are revised annually after an opportunity to suggest amendments has been given to each county committee. The various advisory committees set up to assist and advise the Ministry in questions pertaining to the agricultural industry are also consulted annually regarding the revision of each scheme, and a consultative committee assists in securing the proper correlation between the work of the several advisory committees.

In the majority of schemes all questions of local administration come within the purview of the county committees. As the committees' officers are thus the main channel through which the benefits and knowledge to be derived from the schemes reach the ordinary farmer, it follows that such officials are selected with great care, and appointments are subject to the final approval of the Ministry. Candidates selected must combine sound theoretical knowledge with a capacity for imparting practical instruction.

The schemes are published separately, and copies may be obtained free of charge on application to the Ministry; it is not feasible to publish the schemes in detail in this report, but a brief resumé of the principal features are given in the following pages.

The cost of the agricultural services made available under these schemes is defrayed from moneys voted annually by Parliament to provide for the operations of the Ministry of Agriculture, and from the produce of the agricultural rate (1d in the £) levied locally by each county council for agricultural purposes.

(a) *Scheme of Instruction in Poultry-keeping.*

The following table summarizes the operations of the scheme during the period under review :—

County	No. of instructors	No. of lectures	No. of visits	No. of courses of instruction given	No. of daily classes in these courses	No. of pupils in class attendance register
Antrim	2*	21	1563	4	57	73
Armagh	1*	8	1008	2	31	38
Down	2*	2	1233	9	146	135
Fermanagh	1	3	770	3	40	59
Londonderry	2*	6	1596	7	99	130
Tyrone	2	14	1237	8	112	130
Totals	10	54	7407	33	485	565

*Employed also as instructor in butter-making.

Under the poultry stations scheme, which operates in conjunction with the scheme of instruction in poultry-keeping, poultry stations are established in several districts of each county, and provide facilities whereby residents, especially those in backward districts, may obtain at a reasonable price sittings of eggs from pedigree stock. It is satisfactory to record that very good progress has been made during the last few years under this scheme, and the demand for stations is always in excess of the number available. The system adopted is that county committees are empowered to select persons in the various rural districts of the county to keep poultry stations, in return for which a small premium is offered, provided that the conditions of the scheme have been satisfactorily complied with. Care is taken to ensure that the right type of person is selected, and the fact that only in very rare instances has the premium, or part thereof, been withheld proves that the system adopted with regard to the selection of applicants is based on sound lines. Provision is made in the scheme for three distinct types of stations, viz., hen and duck, goose, and turkey. In the case of hen and duck stations the holders are required to distribute not less than 70 sittings of eggs from the station birds (twelve eggs count as a sitting) before the maximum premium of £7 is paid. It is further stipulated that eggs less than 2 oz. in weight must not be distributed under the scheme. The average price fixed for a sitting is 2s 6d, but a county committee may fix a higher price

if there are circumstances operating in any district that would warrant their doing so. In the case of goose stations the premium is £2, and twelve sittings must be distributed from the station birds—three eggs counting as a sitting—at a maximum price of 3s per sitting. The turkey stations provide for the service of turkey hens at a fee not exceeding 1s per service. Twenty hens other than those belonging to the owner of the station must be served to earn the maximum premium of £3.

An additional premium not exceeding £3 may be granted to selected station-holders who undertake to trap-nest their birds during the winter months, subject to compliance with certain conditions which will be found as an appendix to the poultry stations scheme. Furthermore, committees are empowered to make grants equivalent to 50 per cent. of the extra expenditure incurred by new station-holders in providing a suitable wooden fowl-house and birds of an approved breed to stock the station. As far as the ordinary operations of the scheme are concerned, such grants must not exceed £8 in respect of the erection of a fowl-house or £7 in respect of the provision of birds. Grants on a more generous scale are, however, given to selected applicants in the poorer districts of the several counties.

It might be noted that premiums are restricted to birds of the following breeds :—

Hens.—*Light Breeds*—White Leghorn, Black Leghorn, Brown Leghorn, Black Minorca, Ancona. *General Purposes Breeds*—White Wyandotte, Rhode Island Red, Buff Orpington, Barred Plymouth Rock, Light Sussex.

Ducks.—Indian Runner, Khaki Campbell, Aylesbury.

The following table indicates the extent to which advantage was taken of the scheme in the several counties :—

County	No. of egg distribution stations		Sittings of eggs d'tributed (12 eggs persitti g)	No of egg d'tribut'n stations (goose)	Sittings of eggs d'tributed (3 eggs persitti g)	No. of turkey stations	No. of hens mated
	Hens only	Hens and ducks					
Antrim	29	15	4891	12	174	49	1742
Armagh	16	7	2547	14	211	35	1573
Down	27	12	4247	16	234	59	1448
Fermanagh	12	18	2646	15	183	37	1874
Londonderry	22	11	3279	14	197	34	1210
Tyrone	22	18	4169	24	336	72	3354
Totals	128	81	21779	95	1335	286	11201

Poultry-keeping in Northern Ireland has made marked progress during recent years, and it is estimated that the income at present derived from poultry and eggs approximates closely in value to that from cattle, apart from milk and dairy products.

Not many years ago the average annual output per hen was estimated at under 100 eggs, but at present there are poultry farms in Northern Ireland which show an average of over 150 eggs per bird, and in the egg-laying tests conducted by the Ministry at Stormont the averages vary from 180 to 190. There is still, however, much scope for profitable expansion on small farms where poultry-keeping is an adjunct to the ordinary farm operations.

A special grant of £23,850 was made available during the year for expenditure over a period of years through the agency of county committees of agriculture for the purpose of developing the poultry industry. This sum will be incorporated in the Agricultural Development Fund, which was provided last year for the improvement of live stock, viz., cattle, black-face sheep and swine. The Ministry has decided that these supplementary funds shall be devoted to extending the existing poultry stations scheme, and particularly to establishing new stations in defined poor districts on special terms and conditions. Copies of a circular letter and memorandum issued by the Ministry to each county committee of agriculture in August, 1928, regarding the provision of these funds and the Ministry's proposals for their expenditure will be found at pages 132—134 of the appendices. It is contemplated that during the forthcoming season *additional* stations will be established in each county as follows :—

County	Hen and duck stations		Turkey stations	Goose stations
	In defined poor districts	In other districts		
Antrim ...	12	9	40	6
Armagh ...	9	5	23	7
Down ...	8	6	42	12
Fermanagh ...	7	4	21	8
Londonderry ...	8	6	34	10
Tyrone ...	14	15	40	17
Totals ...	58	45	200	60

In the 1929-30 season it is hoped to bring the total number of new hen (or hen and duck) stations up to 152, and to continue the 200 turkey stations and 60 goose stations.

The subjoined table gives the number of sittings of eggs (by breeds) distributed from poultry stations in each county—duck stations are shown separately but are not recognized for premium purposes unless combined with a hen station :—

Poultry Stations by Breeds.
Hen and Duck Stations.

Breed	Antrim		Armagh		Down		Fermanagh		Londonderry		Tyrone		Total	
	No. of stations	No. of sittings	No. of stations	No. of sittings	No. of stations	No. of sittings	No. of stations	No. of sittings	No. of stations	No. of sittings	No. of stations	No. of sittings	No. of stations	No. of sittings
Wh. Wyand.	16	1542	12	1180	19	1725	9	782	10	985	17	1755	83	7969
Wh. Leghorn	10	1058	5	620	6	747	6	508	8	767	4	361	39	4661
B.P. Rock	2	137	...	...	...	...	1	76	2	111	...	...	3	324
B. Orpington.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bl. Leghorn	...	...	...	...	...	...	1	86	...	...	2	161	3	247
Br. Leghorn	1	113	2	170	4	222	2	107	...	...	3	155	5	262
Bl. Minorca	...	...	...	...	2	239	4	317	1	95	...	...	12	917
Light Sussex	5	363	...	...	2	1063	1	102	2	200	5	466	15	1370
R.I. Reds	9	880	4	473	9	1063	3	224	10	955	9	993	44	4588
Ancona	...	...	...	...	...	...	3	217	...	...	...	...	3	217
Ind. Runner	10	93	3	21	5	63	12	166	6	52	14	180	50	575
Khaki Campbell	6	106	4	84	4	46	6	63	3	62	2	26	25	387
Aylesbury	...	...	...	...	3	142	...	...	2	54	2	73	7	269
Totals	...	4892	...	2518	...	4247	...	2648	...	3281	...	4170	...	21786

The amounts expended by county committees in premiums under this scheme in 1928 were as follows :—

County	Hen and duck stations			Goose stations			Turkey stations		
	£	s.	d.	£	s.	d.	£	s.	d.
Antrim	307	15	0	22	12	2	134	15	0
Armagh	155	17	4	28	0	0	87	10	0
Down	286	17	0	30	19	9	155	17	6
Fermanagh	204	17	0	26	10	0	87	17	6
Londonderry	210	5	1	26	4	6	82	17	6
Tyrone	293	12	0	46	18	4	177	10	0
Totals	1459	3	5	180	19	9	726	7	6

Poultry Demonstration Farms.—The subsidy was continued during the year under review to the owners of the three poultry demonstration farms which were selected by the Ministry early in 1924. Full particulars relating to these farms have been given in the Ministry's previous annual reports, but it may be stated briefly that the Ministry's primary object in selecting and subsidizing these farms was to demonstrate the commercial possibilities of poultry-keeping when managed on up-to-date lines, and the owners, in return for the annual subsidy, undertake to provide data as to expenditure and receipts. It was thought desirable to secure information regarding varied types of holdings, e.g., (a) a large poultry farm run as a separate unit; (b) a small holding run entirely as a poultry farm, and (c) a farm where poultry are kept as an adjunct to the ordinary tillage operations, and with this object in view the selection of farms is determined primarily by their suitability to supply accurate poultry-keeping accounts.

Selected pupils who have finished their course at the Ulster Dairy School are sent to these three farms for training in commercial poultry-keeping. The pupils are usually interchanged between the farms at the end of about six months in order that they may gain wider experience, and during the greater part of the period under review a pupil was in training at each farm.

During the year the Ministry augmented the existing number of subsidized farms by two additional farms, particulars of which are as follows :—

- (1) Owner—Mr. G. C. Richardson, Prospect, Ballinamallard, County Fermanagh.

This farm is situated about seven miles from Enniskillen, and the stock consists of about 1,200 laying hens and 100 Khaki Campbell ducks. The hens consist of pure-bred Rhode Island Reds, White Leghorns, and first cross birds—the last of which are in the majority.

Visiting days—Wednesdays and Saturdays from 2 p.m. to 6 p.m.

(2) Owner—Mr. Thomas Hegan, J.P., Desertcreat, Tullyhogue, County Tyrone.

This farm is situated beside the village of Desertcreat, and when inspected in July last there were about 800 one-year-old hens on the farm, but it was anticipated that 1,200 pullets would be brought into the laying flock in the autumn. The breeds kept are White Wyandotte, White Leghorn, Rhode Island Red and Light Sussex—they are pure-breds, and not crossed.

Visiting days—Any week day, subject to due notice being given to the owner of the farm.

Particulars of the egg-laying test (pullets) held by the Ministry during the period under review will be found at page 48 of this report.

(b) *Scheme of Instruction in Butter-making and Home Cheese-making.*

The primary object of this scheme is to place specialized instruction and help at the disposal of those making butter and cheese in the home dairies. As in all the Ministry's schemes of itinerant instruction the underlying principle in this scheme is the provision in each county for the employment of at least one instructor in butter-making and home cheese-making. Instructors are required, in addition to their main duty of visiting home dairies and giving necessary advice and instruction, to conduct classes in selected districts, and to carry out demonstrations in the making of butter and cheese. The following table summarizes the work performed by the instructors during the period under review—it will be seen that seven instructors are employed, and that the scheme is in operation in counties Antrim, Armagh, Down and Londonderry :—

County	No. of instructors	No. of lectures	No. of visits to private dairies	No. of courses of instruction given	No. of daily classes in each course	No. of pupils on class attendance register
Antrim	2	9	*	2	30	42
Armagh	1	—	*	1	16	8
Down	2	—	*	4	63	42
Londonderry	2	—	*	5	77	57
Totals	7	9	—	12	186	131

*Included in number of visits paid in connexion with the scheme of instruction in poultry-keeping.

A brief account of the Ministry's efforts to assist creameries in connexion with the manufacture of butter will be found at page 83 of this report.

(c) Scheme of Instruction in Horticulture and Bee-keeping.

This scheme is in general operation, and is designed to assist residents in each county engaged in the growing of fruit and vegetables and in the keeping of bees. Under the scheme county committees are empowered to appoint at least one instructor in horticulture and bee-keeping, and the instructor is required to devote his whole time to promoting improvement in the varied branches of horticulture pertaining to his county.

The following table gives particulars of the work performed under the scheme during the year under review :—

County	No of in- structors employed	No. of visits & demonstrations	No. of lectures delivered	Total attendance at lectures	No. of demon- stration plots	No. of vegetable plots
Antrim	2	1717	20	355	33	55
Armagh	2	1534	10	155	13	26
Down	2	1581	17	258	21	59
Fermanagh	1	789	7	206	13	—
Londonderry	1	920	17	377	31	6
Tyrone	*1	914	7	112	3	23
Totals	9	7455	78	1463	114	169

*Took up duty 1st February, 1928.

One of the most troublesome diseases with which fruit growers in Northern Ireland, particularly in the commercial fruit-growing county of Armagh, have to contend is that known as apple scab, and the Ministry, in co-operation with the county Armagh committee of agriculture, has made earnest efforts to eradicate this disease. It has been found that apple scab can be controlled if the fruit trees are sprayed with a certain mixture, particulars of which are set out in detail in one of the Ministry's leaflets (No. 33). In last year's annual report mention was made of a very successful series of demonstrations, illustrating the results obtained by the use of certain sprays on fruit trees, which were carried out in the orchards of Mr. Felix Coyne, "Ideal Orchards," Clintyclay, Tullyroan, County Armagh. It was decided to repeat the demonstrations this season, and three further demonstrations on similar lines to those conducted in 1927 were carried out in Mr. Coyne's orchards. Experiments relating to the control of apple scab were also carried out by the local horticultural instructors during the season on experimental plots in other counties. The Ministry suggested to the county committees concerned that these plots would be suitable centres for the holding of public demonstrations. Acting on this suggestion very successful demonstrations were held in counties Antrim, Londonderry and Tyrone, and, in addition, some of the experimental plots in county Armagh were utilized as local centres to supplement the main demonstrations on Mr. Coyne's farm.

The apple orchard competitions, conducted annually under the auspices of the Ulster Horticultural Society, full particulars of which were given in last year's annual report, were carried out on similar lines this year.

(d) *Prizes for Cottages and Small Farms.*

The scheme continues to meet with a fair measure of support in counties Antrim, Down and Fermanagh, and particulars of last season's operations in each of these three counties are shown in the following table :—

County	No. of entries			No. of prizes awarded in each class			Total amount expended in prizes
	Class I. cottages	Class II. Ex-servicemen	Class III. Championship	Class I.	Class II.	Class III.	
Antrim	82	32	12	36	12	5	£ 70 0 0
Down	67	—	17	25	—	6	74 0 0
Fermanagh	14	8	—	9	6	—	31 0 0

In the cottage section *bona fide* cottagers resident in rural districts are eligible to compete for the prizes offered under this scheme, the basis of awards being (a) cleanliness and general order of cottages and premises; (b) cultivation of the garden, etc.; (c) arrangement of manure heap; (d) general management and care of live stock, particularly pigs and poultry, and (e) management of bees.

The judges usually selected each year are instructors in horticulture.

(e) *Grants to Agricultural Societies.*

Subject to the conditions specified in the scheme, county committees are empowered to make grants to societies not conducted for profit which have been established for the purpose of holding agricultural, poultry, horticultural and farm produce shows; in-

dustrial shows or exhibitions; skilled labour competitions; implement trials; ploughing matches, etc. During the year under review grants were made as follows by county committees :—

County	Amount allocated by county committee	Number and value of subsidies estimated to be paid in respect of:			
		Agricultural shows		Skilled labour competitions (ploughing matches, &c.)	
		Number.	Value.	Number.	Value.
	£ s		£ s		£ s
Antrim	482 10	8	472 10	2	10 0
Armagh	200 0	2	170 0	4	30 0
Down	475 0	13	535 1	2	15 0
Fermanagh	80 0	3	70 0	1	7 10
Londonderry	125 0	5	97 10	2	14 0
Tyrone	307 0	8	280 0	1	7 10
Totals	1669 10	39	1625 1	12	84 0

*Excess expenditure over ordinary allocation met from savings on other schemes.

As the efforts made by the Ministry to assist agricultural societies in Northern Ireland in selecting dates for their annual fixtures which would not clash proved successful during the past season, it has been decided to adopt a similar procedure for the coming year. The secretary of each agricultural society or association has accordingly been asked to furnish the secretary of the county committee of agriculture concerned with the provisional date (or dates) selected for next year. Further it has been arranged that secretaries of county committees will have this information by December next, when they will transmit the particulars to the Ministry for such action as may be considered desirable.

During the year special contributions to the funds of the under-mentioned associations were made by the Ministry as follows :—

	£
Ulster Farmers' Union (Educational Committee) ...	1,300
Royal Ulster Agricultural Society ...	460
Ulster Agricultural Organization Society, Limited ...	700
North-West of Ireland Agricultural Society ...	*120
Ulster Horticultural Society ...	75
Ulster Goat Society ...	50
Ulster Ram Breeders' Association ...	50
Northern Ireland Utility Poultry Society ...	40
Ulster Grade A (Tuberculin Tested) Milk Producers' Association ...	8

*Includes a sum of £20 in lieu of the provision by the Ministry of an educational exhibit at the Society's summer show.

(f) Horse Breeding Scheme.

This scheme, which was identical with that of the previous year, was again put into operation in every county in Northern Ireland.

The annual exhibition of stallions competing for premiums under this scheme was held in February, 1928, in the Show Yard of the Royal Ulster Agricultural Society at Balmoral. As in previous years there were two classes, one for Thoroughbreds, the other for Clydesdales, each animal competing having already been passed as up to premium standard. The number of Thoroughbreds shown was 14, and the number of Clydesdales 24, including 6 young stallions which had been purchased in Scotland for location under the Ministry's scheme in districts where the need for new blood existed.

In addition to the award of premiums, prizes to the total value of £100 were offered by the Royal Ulster Agricultural Society for the seven best stallions of each breed.

All the competing horses were placed by the judges in order of merit by counties in both classes. The several county committees were thus enabled to make a final selection for premiums in their respective counties. With the exception of one Thoroughbred and two Clydesdales, premiums were provisionally awarded by the committees in all cases. Premiums were also provisionally awarded by the county committee concerned in respect of an Irish Draught stallion in county Tyrone and a half-bred stallion in county Fermanagh. Both these animals had been placed by the Ministry in previous years in the counties named.

The usual arrangements were made under which the Railway Companies having termini in Belfast carried stallions free of charge in one direction, the cost of the carriage in the other direction being defrayed by the Ministry.

A Register was published giving particulars of the 38 stallions standing in the several counties during the year.

The following table shows the amounts allocated and expended under this scheme by the several county committees, together with the distribution of premiums in the various counties :—

County	Amount allocated by county committee	Amount expended by county committee	Number of premiums paid by county committee in respect of			Total
			Thorough-bred stallions	Clydesdale stallions	Irish draught & half-bred stallions	
Antrim	£ 375	£ s d 357 10 0	2	6½	—	8½
Armagh	150	147 6 8	1	2	—	3
Down	600	580 0 0	6	5½	—	11½
Fermanagh	185	185 0 0	1	2	1	4
Derry	240	240 0 0	1	4	—	5
Tyrone	320	320 0 0	2	4	1	7
Total	1,870	1,829 16 8	13	24*	2	39*

*In certain instances, where premium stallions travelled for service in two counties, premiums were paid jointly by the committee concerned. Thus, one Clydesdale stallion premium was paid partly by Antrim county committee and partly by Down county committee, and two Clydesdale premiums were paid partly by Antrim and partly by Londonderry county committee. This explains the half-premiums in above table.

The maximum value of premiums fixed in the scheme for Thoroughbred stallions was £70, and for any other breed £45. The values of premiums adopted by each county committee in 1928 are as follows :—

County	Thoroughbred	Clydesdale	Irish draught and half-bred
	£	£	£
Antrim	65	35	—
Armagh	70	40	—
Down	60	40	—
Fermanagh	60	40	45
Derry	60	45	—
Tyrone	60	40	40

Londonderry county committee made a regulation requiring the mare owner to hand to the stallion owner prior to the service of the mare, a veterinary surgeon's certificate that the mare was sound. No special regulations were made by any other county committee.

In the following table particulars are given of the number of mares served by premium stallions under the scheme in 1928 :—

County	Mares served by Thoroughbred stallions	Mares served by Clydesdale stallions	Mares served by Irish draught and half-bred stallions
Antrim	126	327	—
Armagh	25	128	—
Down	375	229	—
Fermanagh	42	100	50
Derry	68	240	—
Tyrone	41	228	56
Total	677	1,252	106

At Cushendall and Carnlough in August, 1928, two Exhibitions were held of the progeny of the Pony stallions which had been introduced into the Glens district of county Antrim in the 1923-24-25 seasons. There were six classes as follows at each centre :—

- Class 1. Two-year-olds of the Glen Pony type.
- „ 2. Two-year-olds not of the Glen Pony type.
- „ 3. Yearlings of the Glen Pony type.
- „ 4. Yearlings not of the Glen Pony type.
- „ 5. Foals at foot.
- „ 6. Three-year-olds, geldings and fillies.

The total number of animals competing in each class was as follows :—

Class 1.	13
„ 2.	8
„ 3.	19
„ 4.	7
„ 5.	40
„ 6.	12

Total 99

Prizes to the total value of £63 10s 0d were paid by the Antrim county committee.

(g) *Cattle-breeding Scheme.*

The objects of this scheme and the methods adopted for attaining these objects have been fully described in the reports for 1927 and previous years.

The amounts allocated by county committees for premiums to bulls in 1928 and the estimated expenditure in each county are as follows :—

County	Amount Allocated	Estimated Expenditure	Total number of Bulls standing for ordinary premiums in county
Antrim	£ 1,834	£ 1,642	106
Armagh	1,059	742	49
Down	1,906	1,881	119
Fermanagh	1,034	977	62
Londonderry	920	836	52
Tyrone	1,722	1,474	93
Totals	£8,475	£7,552	481

Particulars of the bulls standing for ordinary premiums in 1928 under the cattle-breeding scheme are as follows :—

County	Pure-bred registered dairy shorthorn		Registered dairy non-pedi- gree Shorthorn	Short- horn	Aberdeen Angus	Galloway	Total
	Dam and sire registered	Dam only registered					
Antrim	12	17	3	50	6	18	106
Armagh	1	5	4	37	2	—	49
Down	16	10	2	60	31	—	119
Fermanagh	11	1	5	15	30	—	62
Londonderry	12	4	6	23	7	—	52
Tyrone	15	5	3	39	31	—	93
Totals	67	42	23	224	107	18	481

The following table shows by counties the distribution of ordinary premium bulls in the period under review :—

County	Number of bulls retained for service from 1927	Number of bulls provisionally awarded premiums for the first time in 1928	Total number of bulls approved for premiums in 1928
Antrim	58	48	106
Armagh	25	24	49
Down	65	54	119
Fermanagh	23	39	62
Londonderry	22	30	52
Tyrone	36	57	93
Totals ...	229	252	481

The special regulations in regard to services and fees adopted by the several county committees were as follows :—

County	Service Fees	Services		Valuation of holding of cow owners
		Yearling bulls.	Older bulls	
		Minimum No.	Minimum No.	
Antrim	2/6 in all cases	30	40	not limited
Armagh	5/- in all cases	30	40	not limited
Down	2/6 up to £50 valuation 5/- over £50 valuation	30	40	not limited
Fermanagh	2/6 up to £25 valuation 4/- over £25 valuation	30	40	not to exceed £100
Londonderry	4/- in all cases	30	40	not limited
Tyrone	2/6 in all cases	30	40	not limited

The additional money available from the Agricultural Development Fund which was referred to in the last annual report (p. 54) enabled county committees in 1928 to place out in the poorer districts of the county 93 "special term" bulls as follows :—

County.	Shorthorn.	Non-pedigree dairy Shorthorn	Aberdeen Angus	Galloway (for Glens district in Co. Antrim)	Total
Antrim	1	6	1	8	16
Armagh	7	4	4	—	15
Down	8	—	5	—	13
Fermanagh	4	2	13	—	19
Londonderry	1	1	11	—	13
Tyrone	2	1	14	—	17
Totals	23	14	48	8	93

The average cost of these bulls was slightly over £45.

(h) *Registration of Dairy Cattle.*

This scheme aims at effecting improvement in the conformation and milking qualities of pure-bred cattle in Northern Ireland, and an endeavour is made to induce owners of dairy cattle to keep authenticated milk records of their cows, to use for breeding purposes only those animals that have proved to be profitable milk producers, and to dispose of the unremunerative animals in the herds. In pursuance of this purpose the Ministry keeps a "Register of Pure-bred Dairy Cattle" in which pure-bred cows of any dairy breed and their progeny may be entered, subject to the animals passing an inspection for general appearance, and yielding as a result of an official test at least the quantity and quality of milk prescribed in this scheme. A corresponding "Advanced Register" is also kept in which animals of special merit are eligible for entry, subject to the provisions of the scheme.

Inspections of pure-bred cows for provisional selection for registration are carried out twice each year by the Ministry, and all animals provisionally selected are suitably marked for future identification. An owner is required to pay 5/- as an inspection fee for each cow entered for inspection, except where the animals are also entered in a milk recording association, in which case the fee for inspection is only 1/- per cow. Owners of cows provisionally selected for registration are required to weigh the milk yielded by each cow on every seventh day during the milking period, to record the yields on special forms supplied by the Ministry, and to notify within seven days from the date of calving the births of calves out of cows under test. During the milking period milk samplers employed by the Ministry pay periodic visits to the herds under test in order to weigh and sample the milk (morning and evening), and to check the milk records kept by the owners. If the owner is also a member of a milk recording association additional samples are taken at regular intervals by the association's supervisor. All these samples are analysed for butter-fat content at the Ministry's Chemical Research Division, and the results are transmitted direct to each owner concerned. It might be added that the samples are retained by the division for seven days in case a re-test is required.

Provided that the calving period is normal, i.e., under 14 months, the minimum qualifying yields for registration for each breed are as follows :—

Breed	Ordinary Register		Advanced Register	
	Milk yield lb.	Butter-fat lb.	Milk yield lb.	Butter-fat lb.
Shorthorn	6,000	210	8,000	280
British Friesian	8,000	280	10,000	350
Kerry	5,000	175	7,000	245
Jersey	5,000	225	7,000	315
Any other breed	Same as for Shorthorn.			

Special provision, however, has been made to meet the case of a cow producing a calf between 14-16 months (426-487 days) from the date of calving immediately preceding the milking period, and such animals are eligible for registration provided they have given not less than the following yields, which are, for the purpose of entry in the register, subject to the deductions indicated :—

Breed	Minimum yield to qualify for registration		Deductions to be made from actual yield, for entry in Register	
	Milk lb.	Butter-fat lb.	Milk lb.	Butter-fat lb.
Shorthorn	10,000	350	2,000	Corresponding reduction based on the original calculated average percentage of butter-fat.
British Friesian	12,500	437.5	2,500	
Kerry	8,750	306.25	1,750	
Jersey	8,750	393.75	1,750	
Any other Breed	Same as for Shorthorn			

Hitherto cows qualifying for registration under the 14-16 months calving regulation were subject to a deduction in respect of butter-fat of a fixed figure in the case of each breed, e.g., 70 lb. for Shorthorns, 87.5 lb. for British Friesians, 61.25 lb. for Kerry and Jersey, but this year it was decided that it would be fairer to make a variable deduction in the case of each breed based on the original calculated average percentage of butter-fat as an alternative to a flat deduction in all cases.

In all registration cases the calculated average percentage of butter-fat in the milk of a cow of any breed must not fall below 3, but, from next year, cows of the Jersey breed in order to qualify for registration must have a minimum calculated average percentage of butter-fat of 4.

As a result of inspections carried out during the period 242 cows, including 177 pure-bred Shorthorns, 4 non-pedigree Shorthorns, 5 Jerseys, 15 British Friesians, 7 Ayrshires, 31 Kerries and 3 Red Polls, were provisionally selected for registration.

From the inception of the Ministry until the end of the period with which this report deals, a total of 6,031 cows, including 454 pure-bred Shorthorns, 46 British Friesians, 33 Jerseys, 40 Kerries, 13 Ayrshires, 3 Red Polls and 5,442 non-pedigree cattle had complied with the standards prescribed for general appearance, quantity and quality of milk yield and were duly registered. Of this total the number that attained registration standard during the year ending 30th September, 1928, was 77 pure-bred Shorthorns, 1,099 non-pedigree cattle, 4 Jerseys, 4 British Friesians, 1 Ayrshire and 11 Kerries.

The yields of all cows (pure-bred and non-pedigree) registered by the Ministry (i) during the period 1st October, 1927—30th September, 1928, and (ii) from 1st January, 1922, to 30th September, 1928, are shown in the following tables A and B respectively :—

TABLE A.

Breed	Number of cows registered on a yield of				Total No. of cows registered
	Gallons 500-600	Gallons 600-800	Gallons 800-1000	Gallons over 1000	
Pure-bred Shorthorn	—	53	20	4	77
British Friesian	—	—	1	3	4
Ayrshire	—	1	—	—	1
Kerry	7	3	—	1	11
Jersey	1	3	—	—	4
Non-pedigree	—	687	318	94	1,099
Totals	8	747	339	102	1,196

TABLE B.

Breed	No. of cows registered on a yield of				Total No. of cows registered
	Gallons 500-600	Gallons 600-800	Gallons 800-1000	Gallons over 1000	
Pure-bred Shorthorn	—	325	107	22	454
British Friesian	—	6	21	19	46
Ayrshire	—	10	3	—	13
Kerry	26	12	1	1	40
Jersey	8	13	12	—	33
Red Poll	—	1	2	—	3
Non-pedigree	—	3,518	1,484	440	5,442
Totals	34	3,885	1,630	482	6,031

Owners of registered cows are required to notify the births of subsequent calves, and these calves are entered in the registers, provided that the sire used was a pure-bred bull of corresponding breed which had been passed by the Ministry as up to the required standard. In this way the scheme is allied with the cattle-breeding scheme, as the male progeny are eligible to compete for the premiums offered under the latter scheme. Further, as the value of a premium for a bull of this class is higher than that payable in respect of bulls from unregistered dams, an additional incentive is given to owners to test their herds, inasmuch as bigger prices are secured at the cattle sales for the progeny of registered cows.

During the past year 207 bulls, the progeny of registered Shorthorn cows, were inspected, and 96 were provisionally selected for premiums under the cattle-breeding scheme. Of this number 49

were pure-bred animals with dams and sires registered; 18 were pure-bred with dams only registered, and 29 were non-pedigree animals with approved milk records on one or both sides. In addition 61 bulls, the progeny of pure-bred Shorthorn cows, were inspected at owners' residences, and passed as suitable for the service of provisionally selected and registered Shorthorn cows.

For the purpose of ascertaining butter-fat percentages in the milk yielded by cows under test with a view to registration, the Ministry analysed over 5,750 samples during the season 1928.

(i) *Milk Recording Associations.*

The steady growth of the milk recording movement is a clear indication of the importance which the farmer attaches to the dairy cow. Success in the keeping of cows cannot be attained without adopting a system of milk recording, and farmers are rapidly realizing that milk recording is the basis of profitable milk production.

The principal change which was made in the scheme for the year 1928 related to the assistance granted to milk recording associations to procure pure-bred dairy bulls. The arrangement whereby a subsidy equal to two-thirds of the cost price of the animal was granted by the Ministry was discontinued, and associations requiring bulls now apply to their respective county committees of agriculture, who have been provided with special grants from the Agricultural Development Fund to meet the cost of these premiums.

Loans may be obtained from the Ministry for the purchase of premium bulls for the use of members of milk recording associations.

In addition to the usual annual grants made by the Ministry to each association, grants are made by county committees of agriculture towards the cost of purchasing equipment, etc. The allocations made by county committees for this purpose in 1928 were as follows :—

County Antrim	...	...	£180
„ Armagh	...	...	60
„ Down	...	...	130
„ Fermanagh	...	...	110
„ Londonderry	...	...	90
„ Tyrone	...	...	130

During the year 1928 five new associations were established, viz., three in county Antrim, one in county Down and one in county Fermanagh. One old association was revived, viz., Leckpatrick in county Tyrone. The total number of associations recognized by the Ministry during the year was 66, of which two lapsed, viz., Fane Valley in county Armagh, and Rathfriland in county Down. In both cases, however, members desirous of continuing recording have joined neighbouring associations.

The appended tables show the growth of the milk recording movement since the establishment of the Ministry.

County.	Number of Milk Recording Associations							
	1921	1922	1923	1924	1925	1926	1927	1928
Antrim	1	4	4	11	13	14	14	17
Armagh	1	1	1	4	4	5	6	6
Down	...	...	3	2	5	10	12	13
Fermanagh	1	4	3	6	6	6	9	10
Londonderry	...	...	1	4	4	7	7	7
Tyrone	3	4	5	7	10	11	12	13
Totals	6	13	17	34	42	53	60	66

County.	Number of Members							
	1921	1922	1923	1924	1925	1926	1927	1928
Antrim	43	156	168	394	488	447	540	624
Armagh	14	47	133	167	173	189	274	268
Down	...	...	115	68	186	425	502	531
Fermanagh	15	117	94	169	198	211	345	360
Londonderry	...	...	58	168	132	305	302	292
Tyrone	127	121	176	198	346	391	445	429
Totals	199	441	744	1164	1523	1968	2408	2514

County.	Number of Cows under Test							
	1921	1922	1923	1924	1925	1926	1927	1928
Antrim	245	1052	1074	2458	2733	3100	3168	3520
Armagh	112	192	506	747	680	859	1016	1008
Down	...	...	544	440	971	1833	226	2316
Fermanagh	133	931	698	1119	1044	1034	1668	1805
Londonderry	...	...	306	922	824	1793	1750	1638
Tyrone	754	934	1210	1417	1861	2264	2297	2320
Totals	1244	3109	4338	7103	8113	10883	12165	12607

A course of instruction for supervisors was held in Belfast in February, 1928, and was attended by thirteen newly appointed supervisors. At this course the work of milk recording generally was explained, and supervisors present were given an opportunity of asking questions and discussing in general or in particular all the aspects of this valuable branch of dairying.

During the year the Ministry carried out two inspections of cows with a view to registration, and as a result of these inspections 1,099 cows were subsequently entered in the Ministry's Registers of Non-pedigree Dairy Cattle.

Volume I of the Ministry's Register of Non-pedigree Dairy Cattle was issued during the year, and contains particulars of dairy cattle of shorthorn type entered in the Ministry's Registers up to the 31st

December, 1925, including animals, the property of residents in Northern Ireland, which were registered by the Department of Agriculture and Technical Instruction prior to the 1st January, 1922. The register has been published in the hope that it will encourage dairy farmers to keep milk records, and that it will be of assistance to them in their efforts to improve their herds. It is also hoped that farmers will avail themselves of the information contained therein, and that by breeding only from animals which have proved their worth they will co-operate in increasing the quality and output of the dairy stock in Northern Ireland generally. Copies of the register may be obtained from H.M. Stationery Office and its agents or through any bookseller, price 5/- net.

The Ministry has presented a perpetual Challenge Cup to the Central Milk Recording Society to be awarded to the owner of the bull which has sired the largest number of heifers (with the highest yields of milk and butter-fat) which have been registered on their first lactation. The award of the cup is subject to the following conditions :—

- (1) The bull must be pure-bred, and must be entered in the herd book of its breed.
- (2) The bull must be alive at the time the cup is awarded.
- (3) Heifers must have calved under three years old, and must be entered in the Ministry's Register on their first lactation yields, which shall have been checked officially under a milk recording association or under the Ministry's Scheme for the Registration of Pure-bred Dairy Cattle.
- (4) The cup will not be awarded unless at least three heifers have been registered.
- (5) All heifers which have been so registered, whether pedigree or non-pedigree, sired by the bull may be considered in the award of the cup.

These conditions may be revised from time to time.

(j) *Swine-breeding.*

Premiums to boars are restricted to two breeds—Large White Ulster and Large White York—and only animals entered or eligible for entry in the herd books or registers of their respective breeds are selected. The scheme is in general operation, and satisfactory progress continues to be made, as may be instanced from the fact that the number of boars located under the scheme in 1928 was 181, as compared with 147 in 1927, and 105 in 1926. The maximum value of a premium is £10 for the first year, and £8 for the second year, and these values were adopted in each county with the exception of county Tyrone, in which the maximum values were £8 and £6 respectively. Payment of the maximum premium is conditional on a first year premium boar serving not less than 30 sows

and a second year boar not less than 40 sows. The service fee usually charged is 2/-, inclusive of all charges, but power is given to county committees to fix a higher fee, not exceeding 5/-, in the case of farmers whose valuation exceeds the minimum limit fixed by the Committee. Boars that have proved satisfactory in their first year are inspected at the end of the season, and if they have been well cared and have proved to be suitable sires they are eligible for the award of a second year premium.

Particulars of the number of boars awarded premiums in 1928 are summarized in the following table :—

County	1st year boars		2nd year boars		Breeds		Total No. of boars awarded premiums
	Value of premiums	No. of boars	Value of premiums	No. of boars	Large White Ulster	Large White York	
	£		£				
Antrim	10	18	8	16	31	3	34
Armagh	10	10	8	12	20	2	22
Down	10	13	8	14	22	5	27
Fermanagh	10	15	8	9	12	12	24
Londonderry	10	13	8	10	18	5	23
Tyrone	8	33	6	18	40	11	51
Totals	—	102	—	79	143	38	181

Particulars of expenditure under the scheme for 1928 are given in the following table :—

County	Amount allocated		Total	Estimated expenditure for boar premiums	Total No. of boars standing during service season
	From Joint Fund	From Agricultural Development Fund			
	£	£	£	£	
Antrim	250	70	320	308	34
Armagh	140	60	200	196	22
Down	150	66	216	*242	27
Fermanagh	150	70	220	*222	24
Londonderry	150	60	210	210	23
Tyrone	250	72	322	*372	51
Totals	1,090	398	1,488	1,550	181

* Excess of expenditure met by savings from other live stock schemes.

(k) Sheep-breeding.

(a) In mountainous districts.

Under this scheme, which operates in all counties except Fermanagh, high-class black-face rams are supplied on easy terms to breeders in mountainous districts with the object of effecting improvement in the black-face sheep of Northern Ireland, which are usually grazed in flocks on a common run or mountain. The rams

are purchased either by county committees through the Ministry or directly by selected applicants at approved sales, but irrespective of the purchasing arrangement adopted, all committees charge the same flat rate per ram, viz., £3 up to a maximum purchase price of £10—in the case of rams costing more than this figure the selected applicant is required to defray the balance. With a view to introducing new blood it has been the practice to import a certain number of high-class rams from Scotland, but the main supply is secured at the sales held annually in the autumn in Belfast under the auspices of the Ulster Ram Breeders' Association. A breeder procuring a ram under this scheme must undertake to keep the animal in good and healthy breeding condition for two seasons, and at the end of that time the animal is generally disposed of to a breeder in another district. This has proved the most successful system of distribution, as the mountain runs are common to several breeders, and the premium rams have free range with common flocks; further, it entails that a good ram remains in use for three or four years. Efforts are made to have the rams concentrated in particular areas, as more rapid progress results from this system than if the animals were located as isolated units.

Very encouraging progress has been made with this scheme since the Ministry's inception, and the number of rams located each year continues to show an appreciable increase. In the 1922-23 season 15 rams were placed, in the following season 38, and this progress has been accelerated, as the following figures representing the numbers placed out in each succeeding season indicate—84, 106, 134, 187. It will be observed from these figures that last season the number of rams placed was more than twelve times the figure for the season 1922-23 and, with the extra funds which are now available for live stock improvement from the Agricultural Development Fund, it is hoped that approximately 200 will be placed next year.

The table beneath shows the operations of the scheme during the season under review :—

County	Allocation		Total Number of rams placed out	Nett expenditure (cost of rams less receipts from sales)	Excess over ordinary allocation borne from Agricultural Development Fund
	From Joint Fund	From Agricultural Development Fund			
	£	£		£ s d	£ s d
Antrim	100	315	56	363 9 9	263 9 9
Armagh	30	75	6	37 3 9	7 3 9
Down	80	270	43	321 15 9	241 15 9
Londonderry	60	225	30	199 0 3	139 0 3
Tyrone	60	315	52	365 9 4	305 9 4
Totals	330	1,200	187	1,286 18 10	956 18 10

The Ministry continues to co-operate with the Ulster Ram Breeders' Association in all matters pertaining to the improvement of black-face sheep, and, in addition to recognizing this association's autumn sales as centres for the selection of premium rams, it makes an annual contribution to the funds of the association—this year a grant of £50 was given. The exhibitions of black-face sheep in county Antrim, which were inaugurated in 1926 with Cushendall and Carnlough as centres, have now become permanent annual events, and exhibitions on similar lines to previous occasions were conducted in August of this year, the only departure from the previous procedure being that the awards payable to the prize winners in the various classes were defrayed by the county Antrim committee of agriculture from the joint fund and not directly by the Ministry. It might be added that the main object of these exhibitions is to demonstrate the effectiveness of the mountain sheep scheme in county Antrim, as most of the exhibits are the progeny of rams placed under the scheme, and the success of these exhibitions has encouraged other counties in which the scheme functions to inaugurate similar events. This year small sheep shows of a similar nature were promoted by the county committees of Down, Londonderry and Tyrone.

(b) *In lowland districts.*

Premiums for pure-bred rams of lowland breeds were provided during the season under review as follows :—

County	Allocation from Joint Fund	No. of premium rams		
		Border Leicester	Suffolk	Total
Antrim ...	£ 48	6	—	6
Down ...	120	15	—	15
Londonderry ...	104	10	1	11
Totals ...	272	31	1	32
Last year's totals .	200	19	2	21

The regulations governing the operations of the scheme are similar in each county. The maximum value of a premium is £8, and premiums may be awarded for a second and also a third year, provided the ram passes inspection each season—a third year premium, however, is granted only to rams of outstanding merit which have been changed to a new locality. Only shearling rams entered or eligible for entry in the flock book are eligible for selection for premiums under this scheme, and payment of the full premium is conditional on each ram serving not less than 30 visiting ewes other than those the property of the owner of the ram. The maximum service fee stipulated is 2/- per ewe, and, in addition, a charge of

6d per week or part thereof may be made for feeding and caring each ewe during the visit. Only ewes the property of a farmer who is a rated occupier in a rural district of the county are eligible for service under this scheme. The selection of rams for premiums is made at one or other of the autumn sales held in Belfast under the auspices of the Ulster Ram Breeders' Association.

The scheme continues to meet with a fair measure of support, and next season the county Tyrone committee of agriculture proposes to participate.

(1) *Goat-breeding.*

During the period covered by this report the Ministry continued to co-operate with the Ulster Goat Society, which was formed under its auspices in 1922 with the object of improving the breeds of goats in Northern Ireland, and encouraging the keeping of goats by cottagers, labourers, and small farmers, especially those in the more remote and mountainous districts. The method adopted by the society for the furtherance of its objects is the provision of pedigree male goats at reduced prices, and the granting of premiums of £2 in each case, provided the conditions specified by the society are complied with. In this connexion the Ministry presented the society with three pedigree stud goats and made a grant of £50 towards its funds. The society also encourages the keeping of milk records. Such records are checked periodically by the Ministry's sampling officers, and particulars of those goats which have given a calculated yield of not less than 900 lb. of milk in a lactation period not exceeding 45 weeks are entered in the Ministry's Register of Goats. Particulars in the case of animals registered on a yield of 1,000 lb. or over are furnished by the Ministry to the British Goat Society for entry in the milk recorded section of that society's herd book. In the hope of developing the system of keeping records the Ministry decided to issue certificates to members of the Ulster Goat Society owning goats which as a result of official test qualified for entry in the Ministry's Register. There are now twenty-nine goats entered in the Register, and certificates have been issued in each case.

(m) *Creameries.*

Thirty-six central creameries and eighty-eight separating stations were on the list for visits by the Ministry's inspectors. During the year 105 visits were paid to central creameries and 76 to separating stations, and the inspectors availed fully of these visits to afford instruction and advice to the creamery staffs on all matters relating to the manufacture and production of creamery butter, as well as to make recommendations, where necessary, regarding machinery and general working methods.

The experiments at Omagh Creamery, where the Ministry installed a special experimental plant in 1924, were continued during the year, and, in addition, valuable investigations were carried out

regarding the methods of preparing for market cream without the addition of preservatives. It has been decided to continue the experiments for a further year, and as the committee, acting on the advice of the Ministry, has erected a cold store at the creamery, it is proposed to carry out experiments in the cold-storage of butter made from pasteurised cream of different qualities.

Surprise Butter Inspections.—As in previous years surprise butter inspections were held monthly throughout the year at convenient centres in Great Britain and Northern Ireland. The samples, which were called for by telegram, were retained for eight or ten days in order to test their keeping quality, and at the end of that period they were judged in respect of flavour, texture and marketable appearance by two independent butter merchants, and graded into three classes, viz.—“ Premium,” “ Standard ” and “ Below Standard.”

During the year two inspections were held in Belfast, two in Glasgow, and one each in Cardiff, Leeds, Birmingham, Newcastle-on-Tyne, Coleraine, Enniskillen, Omagh and Dungannon. The inspections at cross-channel centres were held during the exporting season (May-October), and on the day following each inspection the Ministry arranged for the holding of an exhibition of the samples to which prominent local wholesale provision merchants were invited in order that they might have an opportunity of inspecting samples which were representative of the butter ordinarily produced by creameries in Northern Ireland. At these exhibitions visitors were furnished with full information regarding the butter industry in Northern Ireland together with particulars of the efforts made by the Ministry to promote improvement in the quality of the produce. In conjunction with the inspection held at Leeds an exhibition was arranged at Sheffield.

The total number of samples judged at surprise butter inspections during the year was 350, and of this number 286, or over 81 per cent., were awarded either “ Premium ” or “ Standard ” marks.

Transport of Northern Ireland Butter.—The Ministry, in conjunction with the Empire Marketing Board, carried out a number of tests with the object of ascertaining the effect of cooling before despatch on the temperature and condition of butter on arrival in Great Britain. These tests showed that cooling before despatch improves the condition of butter as regards both flavour and texture. It is intended to pursue the investigations further during the next exporting season.

Marking of Butter Packages.—Under the provisions of this scheme, a copy of which will be found at page 26 of the appendices to the third annual general report, creameries which consistently produce high quality butter are enabled to brand their boxes with a special Government Stamp. To qualify for the award of this stamp creameries must obtain at least standard marks at surprise butter inspections six times in immediate succession. Regular submission

of samples is essential, and where a creamery fails to gain the requisite marks in respect of a sample of butter forwarded for examination the stamp is withdrawn by the Ministry. The fact that five additional creameries recently qualified for the award of the stamp is evidence that the improvement in standard of quality of butter produced by Northern Ireland creameries mentioned in last year's report was maintained during the period under review.

Training of Dairymaids.—Under this scheme apprenticeships are awarded to specially selected pupils who, at the conclusion of their course at the Ulster Dairy School, desire to obtain practical training in general creamery work with a view to obtaining positions in creameries as dairymaids. The girls are sent to selected creameries, and the course of training is normally of 20 weeks' duration, care being taken to place the girls out only during the summer months when the creameries selected are churning every day. The Ministry makes a small contribution towards the cost of board and lodgings of each pupil during the period of training, and grants are also made to the manager and head dairymaid of the creamery where the instruction is provided. At the termination of their course the girls are subjected to an examination by one of the Ministry's dairying inspectors, and in most cases qualify for the award of the Ministry's certificate of competency in creamery butter-making. Three girls were offered and accepted apprenticeships during this summer, and so far two of them have qualified for the award of the Ministry's certificate—in the case of the remaining girl the period of training is not yet complete.

Sale of Milk Act (Northern Ireland), 1927.—Under the provisions of this Act, which came into operation on the 2nd January, 1928, and is being administered by the Ministry of Home Affairs, licences may be obtained by milk producers and dealers for the sale of Grade A (Tuberculin Tested) milk, subject to compliance with regulations made under the Act by the Ministry in question. Before obtaining a certificate a producer must submit every animal of his herd to a prescribed tuberculin test carried out by an approved veterinary surgeon, and must also comply with certain conditions relating to the bacteriological content of the milk. In this connexion the Ministry of Agriculture has established a Dairy Bacteriology Division, and the officer in charge of this division, in addition to carrying out bacteriological tests, visits the premises of licensees and prospective licensees in order to give advice and ensure that in each case the equipment is suitable and the cleanliness of the premises, etc., satisfactory. The holder of a licence is required to submit his herd to a prescribed tuberculin test at intervals of six months, but

where a herd has two clear tests and no case of re-action, testing will subsequently be necessary only once a year, provided that no new animal has been introduced.

World's Dairy Congress, 1928.—The eighth International Dairy Congress, which was held in Great Britain, commenced its sittings in London on the 26th June, 1928, and for six weeks from that date the delegates visited various places in Great Britain and Ireland attending functions and inspecting farms, dairies, colleges, etc. A number of delegates visited Northern Ireland on the 13th July for a two days' tour, and were received by the Ministry, who arranged an instructive programme for the visitors.

10. AGRICULTURAL LAWS.

Live Stock Breeding Act (Northern Ireland), 1922.

This Act has now been in force for almost five years, its aim being to eliminate all bulls of a low grade, and thus to effect a steady improvement in the cattle of the province. It is, of course, only one plank in the Ministry's programme for developing the cattle industry, and is supplementary to the several cattle improvement schemes, particulars of which are given elsewhere in this report. It may here be mentioned that reports from Great Britain indicate that the value per head of the cattle exported from Ireland has increased considerably in the past decade, and credit for at least some of this improvement may not unreasonably be ascribed to an Act which has the effect of weeding out low grade sires.

Inspection of bulls for licences were carried out in February and September at a large number of centres in Northern Ireland. Farmers were reminded beforehand, through notices in the Press, etc., as in previous years, of the necessity of applying for licences, and advised as to the procedure to be observed in order to have their bulls inspected. The system of inspecting bulls for licences at the annual Spring Sales of the Royal Ulster Agricultural Society at Balmoral, Belfast, the North-West of Ireland Agricultural Society at Londonderry, and a few representative local sales, was continued. Breeders of pure-bred bulls and of non-pedigree registered dairy bulls which had reached the prescribed age on 31st March, 1928, were thus given the choice of having their animals inspected at these sales or at the ordinary inspection centres. Purchasers of young bulls of the required standard were given licences at the sales, and licences were transferred to the purchasers of older licensed bulls,

Table A below gives particulars of the results of inspections held in Spring, 1928, and Table B relates to similar inspections held in Autumn, 1928.

TABLE A.
Spring Inspection, 1928.

County	Number of applications for licences	Number of licences granted	Number of licences refused	Number of applications withdrawn
Antrim	803	640	143	20
Armagh	363	296	51	16
Down	541	475	44	22
Fermanagh	308	261	28	19
Londonderry	451	377	62	12
Tyrone	825	644	144	37
Totals	3,291	2,693	472	126

The foregoing tables includes 301 bulls which were specially inspected at owners' residences subsequent to the ordinary inspections. (287 licensed and 14 rejected).

TABLE B.
Autumn Inspection, 1928.

County	Number of applications for licences	Number of licences granted	Number of licences refused	Number of applications withdrawn
Antrim	335	227	97	11
Armagh	159	109	46	4
Down	168	141	19	8
Fermanagh	146	82	50	14
Londonderry	127	74	50	3
Tyrone	265	164	84	17
Totals	1,200	797	346	57

Included in the above are 26 bulls which were specially inspected at owners' residences subsequent to the ordinary inspections. (19 licensed and 7 rejected).

Special inspections were carried out at owners' residences in the case of 459 bulls, namely 327 young bulls and 132 older bulls. Of these 435 were licensed and 24 rejected.

During the year there were 20 appeals against the Ministry's decision to refuse to grant licences under the Act and, on consideration of the referees' reports in 5 of these cases, the Ministry reversed the original decision and granted the licences. In 15 cases the licences were finally refused.

The Ministry felt obliged to institute proceedings against four persons for keeping unlicensed bulls, and a conviction was secured in each instance.

In 115 cases in which bulls were found on inspection to be below the standard for licence permits were granted to the owners so that the animals might be legally retained during the limited period necessary to get them ready for the butcher. In 61 cases the bulls were slaughtered during the currency of the permits. In the remaining 54 cases, the permits will not expire until 31st December, 1928.

The Ministry again records its appreciation of the valuable assistance received from the Royal Ulster Constabulary in the enforcement of the provisions of the Act.

Horse Breeding Act (Northern Ireland), 1926.

It may be recollected that this Act came into force in January, 1927, and made it compulsory upon every owner of a stallion in Northern Ireland, aged 3 years and upwards, to obtain either a licence if the animal were to be used for service, or a permit if it were intended to employ it solely for draught, riding or other prescribed purposes.

During the year the number of stallions offered for licences was 162, and licences were granted in 146 cases, the remaining 16 animals being rejected. In 12 instances the stallions were rejected for faulty conformation, and in one case for unsoundness, while in the remaining three cases both defects were present. In addition to these 16 stallions rejected in the current year there were in Northern Ireland at the beginning of the period under review eleven known unlicensed stallions, making a total of twenty-seven unlicensed stallions. The present position in regard to these stallions is shown in the following summary :—

Castrated	...	19
Died	...	1
Exported	...	2
Permits given	...	2
Under consideration	...	3

In one case an appeal was lodged against the Ministry's refusal to grant a licence, but the Ministry, having considered the referee's report, confirmed the original decision.

In five cases of breaches of the provisions of the Act the Ministry felt obliged to institute proceedings, and a conviction was obtained in each instance.

The total number of permits granted was 20, the majority being to enable the owners to use the stallions for draught or harness purposes.

In the following table a summary is given of the results of the inspections of stallions for licences in the past three years :—

County	Number of applications for licences			Number of licences granted			Number of licences refused		
	1926	1927	1928	1926	1927	1928	1926	1927	1928
Antrim	41	42	40	35	37	37	6	5	3
Armagh	12	14	17	10	11	15	2	3	2
Down	37	38	44	35	34	41	2	4	3
Fermanagh	14	18	17	11	13	14	3	5	3
Londonderry	31	27	29	28	24	26	3	3	3
Tyrone	17	14	15	13	13	13	4	1	2
Totals	152	153	162	132	132	146	20	21	16

The following table shows the number of stallions of each breed licensed in each county for the 1928 season :—

County	Thoroughbred	Clydesdale	Half-bred	Shire	Suffolk Punch	Irish draught	Hackney	Pony	Percheron	Total
Antrim	3	11	10	—	1	—	3	8	1	37
Armagh	2	4	6	—	—	—	1	2	—	15
Down	17	13	6	1	—	—	1	3	—	41
Fermanagh	1	2	8	—	—	—	—	3	—	14
Londonderry	2	16	4	—	1	—	1	2	—	26
Tyrone	2	5	3	—	—	1	2	—	—	13
Totals	27	51	37	1	2	1	8	18	1	146

Diseases of Animals Acts.

The Swine Fever (Belfast) Order, 1928.

In the spring of the year there was an increase in the number of swine fever cases due, it is believed, to infection having been spread from Belfast sale-yards. In the circumstances the Ministry found it necessary, in March, 1928, to make the above Order, which prohibited the sale or exposure for sale of store swine at any public sale in Belfast. The position as regards swine fever having improved substantially the Ministry at the beginning of July was able to make a fresh Order (the Swine Fever (Belfast) No. 2 Order, 1928) relaxing these restrictions.

The new Order allows store swine to be offered in Belfast sale-yards, provided fat swine are not offered in the sale-yard on the same day. It also requires that premises on which store swine are kept prior to or subsequent to their exposure for sale in Belfast shall be licensed by the Ministry. Five premises have been so licensed.

The Foot-and-Mouth Disease (Emergency Restrictions) (Northern Ireland) Order of 1928.

This Order provides for the application of temporary restrictions when a Veterinary Inspector is of opinion that foot-and-mouth disease exists. The Order is similar to Orders in force in the Irish Free State and in Great Britain.

The Foreign Animals (Northern Ireland) Order of 1928.

The main object of this Order, which was made in August of this year, is to prohibit the bringing into Northern Ireland of ruminating animals or swine from foreign countries where foot-and-mouth disease exists.

Outbreaks of Disease.

The outbreaks of disease reported to the Ministry during the period covered by this report were as follows:—

Bovine Tuberculosis		Anthrax.	Parasitic Mange	Sheep Scab	Swine Fever
Out-breaks	Animals affected				
1,041	1,129	Nil.	1	89	27

Importation of Animals from Great Britain.

Permits were given during the autumn of 1928 for the importation of five thousand, one hundred and twenty-seven sheep from specially-approved sales in Scotland. These sheep were mainly ewes of the Black-face breed.

Permits were also issued for the importation of pedigree cattle from approved sales in Scotland as follows:—

Aberdeen-Angus	...	102
Shorthorns	...	40
Galloways	...	13
Total	...	155

The promoters of these approved sales gave the usual undertaking to comply with conditions laid down by the Ministry. A veterinary Inspector of the Ministry attended each sale to ensure compliance with the conditions, and to issue permits.

The Ministry also issued permits, after careful investigation, for the importation of 12 cattle, 799 sheep, 11 goats and one Large White Boar from farms in Scotland direct to farms in Northern Ireland. The cattle importations comprised the following breeds, viz. :—one British Friesian bull, one Aberdeen Angus bull, and the remainder were Ayrshire heifers. The sheep were composed of the following breeds, viz. :—643 Black-face ewes, 2 Cheviot rams, 145 Cheviot ewes, 2 Border Leicester rams and 7 Border Leicester ewes. The goats were of the Toggenburg and Anglo-Nubian breeds.

In addition, 19 Kerry heifers and 10 ewe lambs were imported from England via the Belfast Quarantine Station.

Exportation of Horses.

Official export certificates were issued in connexion with the export of 64 horses to the United States of America, 8 to Canada, and one to Germany. These animals were mainly of the hunter type.

Slaughtered Animals (Compensation) Bill (Northern Ireland), 1928.

Prior to the passing of the Importation of Animals Act, 1922, the British Ministry was, under the Diseases of Animals Acts, liable to pay compensation for all animals slaughtered in Great Britain on account of foot-and-mouth disease, whether such slaughter took place in landing places or elsewhere. By the Act of 1922, however, the British Ministry was relieved from the obligation of paying compensation for imported animals *slaughtered while in landing places*. The result is that at present Irish exporters are liable to have animals slaughtered at British ports without compensation. Strong official representations on the matter were from time to time made to the British Authorities, but there is no hope that the policy embodied in the Act of 1922 will be reversed.

After careful consideration the conclusion arrived at was that the only practicable solution is an insurance scheme whereby exporters would pay a small fee per head for each animal exported so as to constitute an insurance fund out of which compensation would be paid when necessary. A Bill embodying the proposal so far as Northern Ireland is concerned will be introduced in the next session of Parliament. A similar measure has already been passed by the Irish Free State Parliament.

Transit of Animals.

The Ministry's veterinary inspectors continued their visits to markets and fairs throughout Northern Ireland. Generally speaking, these officers found no evidence of ill-treatment of the animals, but in some cases the practice of holding sales on public thoroughfares where there is heavy traffic renders it difficult to prevent a certain amount of abuse.

Markets and Fairs (Weighing of Cattle) Acts, 1887 & 1891.

As opportunity offered inspections were carried out by the Ministry's inspectors with a view to ascertaining whether proper facilities were provided for the weighing of cattle as required by the above-mentioned Acts.

Auction marts were also inspected and the reports show that on the whole the weighing arrangements are satisfactory.

Regulations affecting the Export of Plants.

One of the most noticeable features of international trade in nursery stock, plants, etc., has been the general development in more recent years of adequate plant health inspection services, and the enforcement by importing countries of stringent regulations to obviate the introduction of plant diseases.

The Ministry, in the interests of Northern Ireland nurserymen and others, has provided the necessary machinery to ensure that Northern Ireland exports comply with the importing requirements of our overseas customers. Chief among such requirements is the almost universal provision that imports must be accompanied by a health certificate from the recognized Plant Health Inspection Authority of the exporting country. In this connexion the Ministry arranged for the inspection and certification of 383 consignments of plants for overseas countries, including Canada, New Zealand, United States of America, South Africa, India and Australia. Consignments in the main consisted of roses and rose stocks.

The Ministry keeps closely in touch with overseas plant importation regulations, and keeps the Northern Ireland trade informed of any new or revised legislation. No opportunity is lost by the Ministry of securing from importing countries any practicable relaxation of stringent requirements which might prove of benefit to Northern Ireland exporters. As an example of this vigilance on the part of the Ministry it may be mentioned that the Canadian Authorities, with a view to minimizing the risk of the introduction into Canada of foot-and-mouth disease, recently made regulations requiring, among other things, that all merchandise packed in any raw product of the soil could be admitted into Canada only if accompanied by certificates as to efficient disinfection in the country of origin. This regulation is prejudicial to the important trade in

nursery stock which Northern Ireland has hitherto carried on with the Dominion, as such stock is usually packed in sphagnum moss or in peat moss litter. The Ministry has, accordingly, taken up with the Canadian Authorities the question of excluding Northern Ireland nursery stock from the scope of their new regulations, and while the matter is not, as yet, definitely settled the Canadian Authorities have evinced a desire to meet the Ministry's representations so far as may be practicable.

Destructive Insects and Pests (Northern Ireland) Order, 1922.

The Order, which is designed to prevent the introduction of plant diseases into Northern Ireland, provides for the certification by the official plant inspection service of the country of origin of all consignments of plants for importation into Northern Ireland from countries other than the United Kingdom and the Channel Islands. The Customs Authorities afford the most valuable assistance in the enforcement of the provisions of this Order by reporting to the Ministry any consignment arriving without the necessary certificate, so that, if deemed necessary, inspection by the Ministry's officers may be arranged. Consignments coming within the scope of the Order consist mainly of bulbs and shrubs from Holland, Belgium and France, and, during the year, some 359 such consignments were landed.

In order to protect Northern Ireland chrysanthemums from the pest known as the "Chrysanthemum Midge" the Ministry amended the above-mentioned Order so as to ensure that all foreign chrysanthemums imported into Northern Ireland shall be accompanied by official health certificates, including a guarantee as to their freedom from the pest mentioned.

Sale of Diseased Plants (Northern Ireland) Order, 1927.

This Order, which was made on the 15th December, 1927, and which came into force on the 1st January, 1928, takes the place of the 1922 Order and continues the provisions of that Order with a view to preventing the sale in Northern Ireland of diseased plants. It also embodies the following additional provisions:—

- (1) The inclusion of *Capsid Bugs* among the scheduled pests.
- (2) An amplification of the definition of "fruit tree canker."
- (3) The prohibition of the sale for planting, etc., of any plant which bears evidence of having been substantially attacked by any insect or pest mentioned in the schedule to the Order.

The Ministry's inspectors examined nursery stock offered for sale at 15 auctions in Belfast. The county horticultural instructors made similar examinations in the case of local sales. No case of disease, however, was found in any of the plants exposed at such sales.

*American Gooseberry Mildew and Black Currant Mite (Ireland)
Order, 1912.*

In the course of their inspections of gardens and orchards, 69 of which were visited, the horticultural instructors advised as to the treatment of cases of American gooseberry mildew and black currant mite. The number of cases of American gooseberry mildew reported was 14, and of black currant mite 16. These figures indicate a decrease as compared with 1927, when the cases reported were 34 and 21 respectively. In 1928, 1,329 gooseberry bushes and 1,647 black currant bushes were treated, and the voluntary destruction of 132 gooseberry bushes and 928 black currant bushes was secured. The systematic spraying of gooseberry bushes has been found to be an extremely effective preventive of American gooseberry mildew. Full information as to this method of dealing with the disease will be found in Leaflet No. 49, which is issued by the Ministry post free on application.

Thirty-two licences were issued for the importation of 18,972 gooseberry bushes, 1,721 black currant bushes, 400 black currant cuttings and 41 red and white currant bushes from Great Britain. Inspections were made of each importation, and in only one case was disease found. In that case a few bushes among a consignment from across the Channel were found to be affected by the mildew. Adequate precautions were taken by tipping the bushes and spraying to eradicate the disease.

Weeds and Agricultural Seeds (Ireland) Act, 1909.

Noxious Weeds.—A campaign on lines similar to those of the previous 4 years was conducted during the summer of 1928, with a view to securing the destruction of noxious weeds as provided for by Part I of the above-mentioned Act. The campaign was prefaced by vigorous propaganda urging the advantages to be gained from an early and thorough eradication of weeds, and there is reason to hope that farmers generally are now becoming alive to the economic advantages of weed destruction. During the period of inspection, which lasted for some six weeks, the 14 inspectors employed visited a total of 10,648 farms on which noxious weeds were prevalent. In the case of 2,974 farms it was found necessary to serve notices requiring the destruction of weeds within a specified time and, in almost all cases, the weeds were satisfactorily cleared. In seven cases, however, the Ministry was compelled to institute legal proceedings, but at the close of the period covered by this report these cases had not been heard.

Agricultural Seeds.—The sampling of agricultural seeds exposed for sale in Northern Ireland was again carried out by the agricultural instructors. In all 266 samples were drawn, of which 243 were found to be satisfactory. The Ministry communicated with the vendors of the remaining 23 samples with a view to deciding as to

whether, having regard to all the circumstances, resort should be had to publication of the facts of the cases as provided for by the Act.

At the close of the period under review the Ministry was still in communication with traders regarding 16 of these unsatisfactory samples, adequate explanations having been received in the other 7 cases.

Packeted vegetable seeds received particular attention, and it has been found that the standard of quality of such seeds is rather unsatisfactory. This matter will receive the Ministry's careful consideration with a view to securing a very necessary improvement in the general quality of such seeds.

Bee Pest Prevention. (Ireland) Act, 1908.

The increase, referred to in the Ministry's last report, in the number of stocks of bees in Northern Ireland has been maintained. In 1928 the number of stocks was 2,939, in 1927—2,283, and in 1926—1,413.

The instructors in bee-keeping paid 1,003 visits to apiaries and examined the stocks therein. Nineteen cases of acarine disease and eight cases of American foul brood were reported as having been dealt with, and it is satisfactory to find that these figures show a substantial diminution as compared with the 84 and 22 cases respectively reported in the previous year.

Fertilizers and Feeding Stuffs.

1. The Fertilisers and Feeding Stuffs Act, 1926.

The Fertilisers and Feeding Stuffs (Northern Ireland) Regulations which were made by the Ministry on the 5th June, 1928, provided the necessary machinery for implementing the above-mentioned Act in Northern Ireland, and the 1st July, 1928, was appointed as the day on which the new legislation should come into operation.

Prior to the appointed day both the fertilisers and feeding stuffs trade and the agricultural community were fully advised of the impending legal changes.

The various county and county borough councils have, as required by the Act, appointed the necessary agricultural analysts and official samplers, and a list of these officers will be found on page 118 of the appendix to this report.

2. The Fertilisers and Feeding Stuffs Act, 1906.

This Act was revoked in so far as it applied to Northern Ireland on the 1st July, 1928—the date of the coming into operation of the Act of 1926. The number of samples of fertilisers and feeding stuffs drawn under the 1906 Act by official samplers during the period

from the 1st October, 1927, to the 30th June, 1928, was as follows :—

Fertilisers.		Feeding Stuffs.		Total.
Official.	Unofficial.	Official.	Unofficial.	
16	17	6	31	70

On the whole the analyses of these samples showed that the general quality of the fertilisers and feeding stuffs on the Northern Ireland market continued to be satisfactory.

Isolated cases arose in which the Ministry was compelled to draw attention to breaches of the Act. For example, in two cases incorrect invoices were supplied in connexion with sales of basic slag and cotton seed meal. In the sale of slag the percentages of soluble and insoluble phosphates were not supplied, and in the case of the feeding stuff the combined figure for the oil and albuminoid content was given in place of the individual figures required by the Act. The offenders in each case were warned of the consequences of a repetition of such offences. Again in connexion with a sample of "brown sharps" it was found on analysis that the sample contained an excessive amount of crude fibre, much of which was not derived from wheat; while an analysis of a sample of white pollard showed that the material was swarming with mites. In each of these cases also warnings were issued.

It was found necessary to institute proceedings against a Belfast merchant for failing to furnish on or before, or as soon as possible after, the delivery of a consignment of cotton meal the invoice as required by the Act. A conviction was secured, and a penalty of £10 or three months' imprisonment was imposed. The defendant appealed, and the appeal was heard at the Recorder's Court, when the Recorder, having first reserved judgment, subsequently decided in favour of the defendant, holding that the Ministry was not, under the 1906 Act, entitled to prosecute. The 1926 Act places beyond doubt the powers of the Ministry in this respect.

3. General.

A considerable quantity of French superphosphate was imported during last spring into Northern Ireland, and with a view to ascertaining the quality of this fertiliser the Ministry arranged for the drawing of samples in various parts of the country. Analyses of these samples showed that with one exception the superphosphate was of a standard higher than 35%. In the case of the exception mentioned the attention of the vendor was drawn to the matter.

It was found necessary to warn farmers of the need for caution in buying special potato manure alleged to be prepared in accordance with the Ministry's formula, as there was reason to suppose that a certain amount of misrepresentation existed in this connexion.

Reports reached the Ministry that pollard, adulterated with an admixture of either rice meal or tapioca root flour, was being sold in Northern Ireland. The drawing and subsequent analyses of samples of pollard failed, however, to show that there was any substantial ground for such allegations.

The Ministry has repeatedly directed the attention of farmers to the extravagant prices charged for proprietary feeding stuffs, etc., which may not possess as high a feeding value as a mixture of ordinary meals which could be prepared by farmers themselves at a comparatively trifling cost. Early in the present year the attention of the Ministry was drawn to a commodity called "Codlrvine," which was being offered as an addition to the rations of feeding stuffs for calves, cows and fattening cattle. The price of this commodity was 52/- per cwt. The Ministry issued a warning to farmers that the material in question had been examined by its experts in the ordinary course of their duty, and that the Ministry was advised that the article had no value beyond that of an ordinary feeding stuff, for which purpose it was considered to be inferior to a mixture of meals costing 10/- per cwt.

11. FLAX AND POTATO INDUSTRIES.

(a) *Flax Industry.*

In view of the value of the flax-growing industry to both the agricultural and industrial communities of Northern Ireland it is gratifying to find that the sequence of decreasing acreages of flax sown has at length been broken. Thirty-seven thousand, two hundred and forty-seven acres were under flax in 1928, being an increase of 41.4 per cent. on the previous year's acreage. This notable and welcome increase is attributed mainly to the higher prices offered for flax in the season of 1927-1928, when scutched flax realized as much as 4/- per stone higher than the prices obtained during the corresponding period of 1926-1927.

In the last report mention was made of the Ministry's efforts, assisted by the Empire Marketing Board, to propagate in Canada seed of the "J.W.S." variety. Thirty tons of this seed from crops grown in Canada were sent to Northern Ireland through commercial channels for sowing in 1928. The seed was of excellent quality, and gave very good results. The balance of the seed available from the 1927 Canadian crop was sown in Canada, and it is estimated that about 1,600 acres of "J.W.S." seed were grown there in 1928.

The propagation on an experimental scale of "J.W.S." seed in New Zealand was continued at the Canterbury Agricultural College Farm, Christchurch, and the crop grown during the 1927-8 season was reported to yield 10 cwt. of seed per acre. In this connexion it may be mentioned that the crop was grown purely for its seed, being harvested and threshed in the same manner as ordinary grain crops. A consignment of 1 ton of the seed was sent to Northern Ireland, but it arrived too late for sowing in the 1928 season. The seed, however, was of excellent quality. Further propagation of the variety is being carried on in New Zealand, and to assist in this work a grant of 5 tons of English-grown "J.W.S." seed is being sent to that country by the Empire Marketing Board.

Flax Variety Trials.

Trials with the undermentioned eleven varieties were continued at five centres in the Coleraine district on lines similar to those conducted in previous years.

Blenda Pure Line.

Dutch Pure Strain H.

Department's Pure Line No. 6.

Linen Industry Research Association's No. 235.

Pernau Crown.

J.W.S. ex New Zealand.

J.W.S. ex Ontario, Canada.

J.W.S. ex Manitoba, Canada.

J.W.S. ex Saskatchewan, Canada.

J.W.S. ex Alberta, Canada.

J.W.S. ex England.

Propagation of Pure Lines of Flax.

The following varieties were propagated this year on a farm in Essex, and a rapid increase in production was obtained :—

M1/14,

M7/18,

M3/16,

Pure Line 27, and

Hunter's Hybrid 2 x 6.

Similar work was carried out by the Canadian Department of Agriculture acting in co-operation with the Ministry.

Flax Demonstrations.

With a view to giving farmers in districts into which pure line varieties have not yet been introduced an opportunity of comparing the relative merits of some of the pure lines with the ordinary commercial varieties of flax seed, a number of demonstration plots were laid down in several localities in Northern Ireland.

General.

The Ministry collects each year information from different sources as to the quantity and the quality of the various kinds of flax seed available for sowing, and early in the spring of 1928 the relevant information was as usual issued in leaflet form.

Scutch Mills Act (Northern Ireland), 1923.

During the flax scutching season fifty-four scutch mills were inspected under this Act, and, with two exceptions, the position was found to be satisfactory. In each of the two cases mentioned, the mill owners were prosecuted for (1) failure to furnish to the owners of flax a statement in writing in accordance with section 1 (2) (c) of

the Act; (2) failure to keep a record of the scutching operations in accordance with section 1 (2) (b), and (3) for disposing of tow otherwise than by weight, section 1 (3). Convictions were secured in each instance.

Tow Prices.

Particulars as to the prices current for tow at various centres throughout Northern Ireland were collected at regular intervals during the year, and publication of these particulars was effected through the press for the information of flax-growers.

Instructors.

Five officers employed mainly on flax instruction duties were stationed at various centres throughout the province.

(b) Potato Industry.

An increase in the acreage under potatoes is again recorded for 1928, 155,508 acres having been planted as compared with 153,136 acres in 1927.

The area under immune varieties continues steadily to grow larger; 68 per cent. of the total acreage in 1928 was under immunes, as compared with 65 per cent. in the previous year, and 33 per cent. in 1923.

Black Scab in Potatoes Orders.

On the whole, the position in regard to black scab disease during 1928 remained satisfactory. Certain minor cases of disease were, however, discovered in areas adjoining districts already scheduled, and, as a result, the Ministry in December, 1927, made the Black Scab in Potatoes (Northern Ireland) Orders (Amendment Order), 1927, which scheduled certain townlands in the neighbourhood of Newry, Cookstown and Toome. The townland of Toome was also scheduled for movement only with the object of preventing the spread of disease from the adjacent scheduled area in the county Londonderry.

In the administration of these Orders the Ministry now receives the very general support of the farming community. Breaches of the provisions of the Orders were, however, committed in a few isolated cases, and it was found necessary to institute legal proceedings in seven cases in all of which convictions were secured.

Marketing of Potatoes.

1. Marketing of Potatoes (Northern Ireland) Bill, 1928.

In previous reports emphasis has frequently been laid on the importance to Northern Ireland agriculture of the potato crop. Not only does it form the basis for an exceedingly valuable export trade,

but it is the keystone of the system of crop rotation in the six county area. While the quality of Northern Ireland potatoes has always been such as would recommend them in any market, it is, nevertheless, a fact that the methods of placing our potatoes on the export market in recent years have been such as seriously to jeopardize our export trade.

The Agricultural Produce Committee, which fully investigated this question, stated in their report that—

“ We received conclusive evidence that Northern Ireland at present stands in the gravest danger of losing its chief outlet for its important potato industry. In many of the large British consuming areas buyers are evincing the strongest disinclination to take Northern Ireland potatoes. These buyers complain, and the justice of their complaint is beyond question, of inferior selection and dressing; of the mixing of varieties of dissimilar keeping, cooking and table qualities; of the incorrect description of consignments; of waste through the use of improper bags; of shortage of weight; and of other undesirable features. Unfortunately these shortcomings on the part of our own consignments are accentuated by the condition in which certain of our foreign competitors place their inspected potatoes on the British market. In foreign markets with which Northern Ireland formerly conducted an important export trade in seed potatoes, the same unsatisfactory position is disclosed, and certain of those markets are now being increasingly supplied from other sources with seed of guaranteed purity and quality.

We are emphatically of the opinion that the taking of legislative action to restore confidence in our potato exports is a matter of urgency.”

It may also be pointed out that progressive agricultural opinion in Northern Ireland is now firmly convinced of the necessity for official inspection of all potatoes offered for export.

The Ministry has, for several years, been satisfied on this point, and has wished to take the necessary legislative steps to secure the better grading, packing, etc., of Northern Ireland potatoes. Difficulties, however, arising out of the wording of the Government of Ireland Act, 1920, prevented the problem being dealt with in an adequate manner. The doubts thrown by that Act on the powers of the Government of Northern Ireland to legislate in certain trade matters have now been removed by the Northern Ireland (Miscellaneous Provisions) Act recently passed by the Imperial Parliament, and it has thus been found practicable to prepare

for introduction in the Northern Ireland Parliament a Bill, of which the chief features are—

- (1) All merchants exporting potatoes to Great Britain must be licensed, and in the first instance every person applying for a licence will obtain one—its continuance depending on compliance with the regulations. The fee of £1 will be charged for each licence.
- (2) Potatoes exported to Great Britain must, with certain minor exceptions, be accompanied by a certificate of an inspector that they are of the prescribed standard of quality, and have been graded and packed in a proper manner. In order to help to cover the cost of administering the Act a fee of 6d per ton will be charged for all potatoes inspected.
- (3) It is also proposed to grant permits for potatoes coming within certain categories, such as lots grown by the exporters, lots sent for experimental, demonstration, or similar purposes, and lots of less than, say, one ton. Licences will not be required in these cases, but consignments may be inspected.
- (4) Where, for the purpose of issuing a permit, inspection of a consignment is necessary, fees at the rate of 6d per ton will be charged, but for the permit itself no fee will be charged. The Bill provides that at present its provisions shall not apply to potatoes sent to the Irish Free State, but later on an arrangement can be made to have such exports inspected if considered desirable.
- (5) The intention is that the Act shall come into force on the first day of February next—the period intervening between the passage of the measure and its coming into operation being devoted to the training of the necessary staff and the education of the farmer and the merchant in the provisions of the Act.

2. *General.*

The Ministry continues in every practicable way to assist growers and merchants in maintaining and developing their hold on existing outlets for the Northern Ireland potato crop, and in finding a footing in new markets. The possibility of extending our important seed export trade has received earnest consideration during the year, and in the spring the Ministry convened a conference of the leading merchants to discuss this question. As a result of this discussion the Ministry prepared and issued a leaflet giving information as to the various overseas markets for seed potatoes, and as to the individual requirements of each market. Emphasis was laid on the

importance of ensuring that seed for export is perfectly pure, and in this connexion the necessity was stressed for utilizing to the full the Ministry's scheme for the inspection of growing crops. Advice was also given as to the efficient selection and storage of seed prior to delivery to the merchant.

The attention of the Ministry was directed to the fact that the Spanish Authorities had made a new regulation requiring that all seed potatoes for importation into Spanish territory must be officially certified as having originated at least 20 kilometres from any case of black scab disease. This new requirement would have hampered seriously the valuable seed trade which Northern Ireland conducts with the Canary Islands, and, therefore, the Ministry caused representations to be made to the Spanish Authorities on the matter. While the question is not as yet adjusted entirely to the satisfaction of the Ministry, and while further representations are contemplated, it is, nevertheless, satisfactory to record that potatoes originating not less than 5 kilometres from disease may now be imported from Northern Ireland to the Canary Islands.

During the shipping season 275 consignments, covering a total of 3,761 tons, for the Canary Islands were inspected and certified by the Ministry.

Some 4,000 tons of seed were shipped to Malta in respect of which 204 certificates of inspection were issued.

A feature of last season's trade was the fact that 29,358 tons of potatoes were officially certified by the Ministry and shipped to Scotland. In the previous year only 4,800 tons were so shipped. The notable increase in this trade was largely due to the 1927 potato crop in Scotland having been much below the average.

Inspection of Potatoes for Export.

(a) *Scheduled Area.*—An increase of approximately 4,000 tons in the quantity of potatoes exported from the county Down scheduled area during the 1927-28 shipping season is to be recorded, the figures being 57,167 tons, as compared with 53,138 tons exported in the 1926-27 season. In the South Londonderry scheduled area the exports for the season were 14,553 tons. This figure also shows a substantial increase over the exports for the 1926-27 season, when the figure was 9,316 tons. Quality certificates in respect of all these potatoes were issued after inspection.

(b) *Non-scheduled Area.*—The total quantity of potatoes from non-scheduled areas inspected before export shows a considerable decrease as compared with the figures for the previous year. This decrease is accounted for by the fact that in 1927 the exports were greatly augmented by an abnormal demand from France for potatoes. As the 1927 potato crop in France was considerably above the average as regards production, a demand for potatoes for that country

did not take place in the 1927-28 shipping season, consequently, exports to that country fell from 32,116 tons in 1927 to 12,769 tons in 1928. As the 1927 exports were some 25,000 tons over the normal exports, the trade during the year under review may, however, be regarded as well above average.

Potatoes Importation (Ireland) Order, 1920.

Under the provisions of this Order the Ministry issued 49 licences covering the importation of 36 tons of potatoes, mainly seed from Great Britain. The varieties imported were principally Majestic, British Queen, Duke of York, Witchhill and Edzell Blue. In addition special licences were issued for the landing in Northern Ireland of one ton of seed potatoes of the new variety "Arran Banner," and some miscellaneous tubers for experimental purposes.

Immune Varieties and Inspection in Scheduled Areas.

The list of immune varieties of potatoes approved for planting in scheduled areas was not altered during the year. The 25 varieties on this list comprise the best of the immune varieties. Permission, however, is in certain cases granted to growers in scheduled areas to plant certain other immune varieties. Such licences were, during the planting season of 1928, granted in 20 cases in respect of the varieties "Arran Banner" and "Ben Lomond," the former of which is a promising new variety.

All growing crops of potatoes in the scheduled areas were, as usual, inspected during the summer. Where non-immune impurities were found in any crop the grower was required to have such impurities removed. Further, if any crop was found so impure that "rogueing" would not be a satisfactory remedy the owner was called upon to sign an undertaking that he would not use any of the produce of the crop for seed purposes, and he was advised as to where crops of pure immunes could be obtained in his neighbourhood.

Inspection of Growing Crops of Potatoes outside the Scheduled Areas.

It is satisfactory to record a further increase in the acreage of growing crops of potatoes which have been certified as to purity in non-scheduled areas under the voluntary inspection scheme inaugurated by the Ministry in 1922. 2,982 acres of immune varieties and 2,791 acres of non-immune varieties were certified in 1928, while 694 acres of potatoes which were not sufficiently pure to qualify for a purity certificate (which necessitates a purity of 99½ per cent.) were specially certified as being at least 97 per cent. pure. In all 6,467 acres were certified, as compared with 5,591 acres the previous year.

" Arran Victory " is still the most popular immune variety, there being 1,412 acres of this variety certified, or approximately 50 per cent. of the total immune acreage certified. Of the certified non-immunes " Up-to-Date " has the largest acreage, viz., 2,129 acres, or roughly 75 per cent. of the total non-immune acreage certified.

Experimental Work.

The following is a very brief summary of the experimental work in connexion with potatoes undertaken by the Ministry during 1928. Full details of this work have already been published in leaflet form.

The experiments were mainly carried out at the Ministry's Experimental Grounds at Stormont, Belfast, at the North-West Agricultural School, Strabane, and at the Kilkeel Trial Grounds in the scheduled area in county Down.

(1) Variety Trials.

Carried out with a view to determining the relative merits of new immune varieties.

(2) Change of Seed Tests.

To compare seed potatoes drawn from various sources with stocks of similar varieties grown at Stormont for several seasons, and thereby to determine the districts from which the healthiest stocks of seed potatoes can be obtained.

(3) Effect of planting seed at different distances apart.

(4) Tests of different methods of cutting seed.

(5) Immunity Trials.

These immunity trials were carried out in conjunction with the English Ministry of Agriculture and the Board of Agriculture for Scotland, with a view to ascertaining the immunity from black scab disease of certain varieties. The trials were conducted at the Ministry's Trial Grounds, Kilkeel, county Down. Tests were also made at this centre to assist home potato raisers in ascertaining whether new varieties propagated by them are immune, and also with a view to the identification of tubers submitted by inspectors and growers.

(6) In order to ensure that the seed potatoes used in the experimental plots of potatoes laid down by the instructors in agriculture are uniform in character, the Ministry arranges for the seed for such plots to be supplied from potatoes grown at the Strabane experimental grounds.

12. FORESTRY.

So far as suitable lands were forthcoming at an economic price the Ministry continued to develop its forestry policy on the lines already laid down. The energies of the directing staff were devoted

largely to the survey and acquisition of new areas, with the satisfactory result that, as shown in the following tables, a substantial increase in the area available for planting in future years has been secured. Operations during the year may be conveniently dealt with under the following heads :—

1. *Operations under the direct control of the Ministry.*

(a) *New areas.*—In addition to the old centres mentioned in previous reports the Ministry during the past year entered into possession of the following new areas :—

Approximate area acres.	Situation of land.	Method of acquisition.
735	Tardree and Carnearney, county Antrim	Purchase.
447	Glenarm, county Antrim	Lease.
311	Castlewellan, county Down	Lease.
402	Favour Royal, Augher, county Tyrone	Purchase.
34	Clogher, county Tyrone	Purchase.
534	Ballyveely and Drumeny, county Antrim	Lease.

2,463

Negotiations have been concluded—or practically concluded—for the acquisition of the following further areas :—

Approximate area. acres.	Situation of land.	Method of acquisition.
3,933	Rostrevor, county Down	Purchase.
200	Cam Mountain, county London- derry	Purchase.
336	Drumramer, county London- derry	Purchase.
96	Ballycastle, county Antrim	Purchase.
197	Fathom Wood, Newry, county Armagh	Purchase.
257	Ballycrum, near Drumramer, county Londonderry	Purchase.
13	Tullycorker, county Tyrone	Purchase.
13	do. do.	Purchase.

5,045

Negotiations are also in progress for the acquisition of further areas, comprising upwards of 3,830 acres.

(b) *Existing Areas.*—Up to the end of the period covered by last year's report the total area under the Ministry's control was 5,076 acres, so that with the above 2,463 acres newly acquired the

area is now 7,539 acres. Of this area, as will be seen from Table 1 (page 107), 503 acres had been planted by the State up to the end of September, 1921, and since the establishment of the Ministry a further area of 2,501 acres has been planted representing approximately four and a half million trees.

At Baronscourt centre, out of the total area of 3,034 acres available for afforestation, 1,761 acres (including 179 acres of young wood), have now been taken over.

In Table 2 (page 108) particulars are given of the numbers and species of trees planted at each centre during the season 1927-28. The species were nearly all coniferae, the percentage of each species planted being as follows :—

Norway and Sitka Spruce	...	...	36.5
Douglas Fir	...	...	32.3
Scots and Corsican Pine	...	...	18.6
European and Jap Larch	...	...	7.7
Others	...	...	4.9

2. *Grants for planting.*—Under this scheme, whereby grants may be given to persons who undertake to plant trees on a commercial scale on their holdings, four applications were received, and in two cases grants were paid. In the other two cases grants were provisionally approved, and will be paid as soon as the necessary clearing and planting have been carried out.

3. *Supply of trees from Ministry's nurseries.*—In order to meet the needs of planters on a small scale, arrangements were made during the planting season 1927-28 under which farmers were supplied, at reduced prices, with young forest trees from the Ministry's nurseries. Fifty-six persons availed themselves of the scheme, and were supplied with 67,000 trees.

4. *General.*—In accordance with section 32 (1) and (2) of the Irish Land Act, 1909, occupiers of holdings purchased under the Irish Land Acts must obtain the permission of the Ministry before cutting down or uprooting trees which are necessary for the ornament or shelter of the holding. During the year such permission was sought in six cases, and in each instance it was given.

At the request of the owners the Ministry's forestry inspector visited the plantations of three persons and gave advice in regard to the general working of the plantations.

TABLE 1.

PROGRESS OF PLANTING.

Centre	Total Area	Area planted up to 30th September, 1921	Area Planted						Total area planted up to 30th September, 1928
			1921-22	1922-23	1923-24	1924-25	1925-26	1926-27		1927-28
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Baronscourt	3,034	*179	293	174	211	179.5	189.25	262.5	162.3
Ballykelly	254	53.5	20.5	9.5	12	7.5	7	7.5	7.5
Castlecaldwell	303	103	41	26.5	19.5	—	13	14.5	10
Knockmany	468	168	23	34.5	19.5	20	22	30.5	61.8
Newcastle and Castlewellan	893	—	—	—	62	73	117.25	257	119.8
Hillsborough	435	—	—	—	—	—	—	—	—
Totals	5,387	503.5	377.5	244.5	324	280	348.5	564.5	361.4

*This area was under young wood when the land was acquired. Since that time 29 acres of the land have been cut over, of which four acres have been replanted.

†In addition the following areas are under old wood, including shelter belts and scrub covered areas :—Ballykelly, 125 acres; Castlecaldwell, 65 acres; Knockmany, 89 acres.

TABLE 2.

Plantations made during the year ended 30th September, 1928.

Forestry Centre	Area Planted (acres).				Species planted including replacements. (Thousands)							
	Afforested.		Re-afforested.		Total.		Scots and Corsican Pine.	European and Jap Larch.	Douglas Fir.	Norway and Sitka Spruce.	Others.	Total.
	Conifer.	Broad leaved.	Conifer.	Broad leaved.	Conifer.	Broad leaved.						
Baronscourt	42	—	120.3	—	162.3	15.8	14.6	140.0	130.6	14.8	317.4	
Ballykelly	—	—	7.5	—	7.5	—	—	12.2	3.8	—	16.0	
Castledawell	—	—	10.0	—	10.0	3.0	3.0	—	11.6	—	17.6	
Knockmany	26	—	35.8	—	61.8	—	0.5	59.8	35.6	1.1	98.2	
Newcastle and Castlewellan	—	—	119.8	—	119.8	109.1	35.0	10.0	69.5	8.6	238.7	
Hillsborough	—	—	—	—	—	—	—	—	—	—	—	
Total	68	—	293.4	—	361.4	127.9	53.1	222.0	251.1	24.5	687.9	

13. STATISTICS AND INTELLIGENCE.

As in previous years since 1923 the agricultural statistics were collected in 1928 by the Royal Ulster Constabulary. For this purpose Northern Ireland was divided into 633 enumeration districts, each of which comprised a number of townlands lying within the boundaries of a rural or urban district. A member of the Royal Ulster Constabulary acted as enumerator for each district, and called upon every land or stock holder in the district in order to obtain particulars of the area under crops and the numbers of live stock at the 1st of June.

The following particulars were collected in 1928 :—

1. The acreage under each crop and the division of land.
2. „ „ „ „ variety of potato.
3. „ „ „ „ kind of fruit.
4. „ „ „ intended to be saved for grass seed.
5. „ „ „ number of each description of live stock according to age.
6. „ „ „ foals, calves, lambs and pigs born.
7. „ „ „ pure-bred breeding sheep, according to breed.
8. „ „ „ stocks of bees and the quantity of honey and wax produced.
9. „ „ „ deaths amongst horses, cattle, sheep and pigs.
10. „ „ „ persons engaged in agriculture.
11. „ „ „ acreage planted or cleared under forestry operations.
12. „ „ „ number of persons occupying more than one farm.
13. „ „ „ farms extending into more than one enumeration district.
14. „ „ „ „ holdings according to size.

The first returns were received from the Royal Ulster Constabulary on the 29th June, 1928, and the last on 19th July, 1928. A preliminary statement showing the acreage under crops and the numbers of live stock was issued on the 24th July, 1928, or one day earlier than in 1927. Every effort is made to ensure the early publication of this information, and attention may be directed to the dates upon which this statement has been issued in recent years.

In 1924 the statement appeared on the 5th September.

„ 1925	„ „ „ „ „ „	13th August.
„ 1926	„ „ „ „ „ „	31st July.
„ 1927	„ „ „ „ „ „	25th July.
„ 1928	„ „ „ „ „ „	24th July.

The early date upon which the Ministry has been able to publish the preliminary agricultural statistics reflects the highest credit upon the efficiency with which the work of collecting the statistics is performed by the constabulary.

After the issue of the preliminary statement a detailed examination of the returns from the Royal Ulster Constabulary was commenced in order to have any errors rectified and final figures compiled. It was found that the final figures showed no material difference from those already published.

The statement showing the areas under different varieties of potatoes was issued on the 9th August, 1928. The corresponding statement for 1927 did not appear until the 27th October, and for 1926 until 9th November.

The report upon the agricultural statistics of Northern Ireland for 1926 was published in December, 1927. The report supplies detailed particulars of the acreage, production and yield of crops, the number of live stock and the number of persons employed in agriculture. Sections dealing with the prices of live stock, agricultural produce, seeds, fertilizers, feeding stuffs and the trade in live stock through Northern Ireland ports are also included.

The preparation of the tables for the 1927 report has been completed.

Crop Yields.—The enumerators of agricultural statistics make enquiries regarding the yield of crops in their districts. These enquiries are made in respect of—

- (a) the hay crop;
- (b) the cereal and potato crops;
- (c) the root and flax crops.

The farmers visited are those who, in the opinion of the enumerator, are in the best position to give reliable estimates of the yields of the different crops. Independent returns of the yields of the principal crops are also obtained for each rural district in Northern Ireland from the itinerant instructors in agriculture, and these returns are used as a check on the estimates furnished by the enumerators. In 1927 the returns from the Royal Ulster Constabulary, after careful scrutiny in the Ministry, were used as the basis on which the production of each crop was estimated. The results of the estimated production of the more important crops were published in five statements, viz., hay in November, 1927; wheat, oats and barley in December, 1927; potatoes in December, 1927; turnips and mangels in January, 1928; and flax in June, 1928. A collected statement showing the acreage and production of each of the above crops was then prepared and issued in January, 1928.

In continuation of the policy of maintaining closer relationships with the police enumerators, the Superintendent of the Statistics Branch paid visits to a number of the barracks during the course of the collection of the statistics in January, 1928. These visits have proved that the enumerators take a conscientious view of their duties, and that every effort is made to furnish accurate and reliable returns.

Agricultural Prices.—During the course of the year it became evident that the weekly reports of the prices of agricultural commodities at markets in Northern Ireland could with advantage be amplified. The statement was, therefore, recast so as to include notes regarding the market prices and supplies of the different commodities on sale. Particulars of the prices of pork at Smithfield

Market, London, have also been supplied in view of the development of the trade in fresh pork for the English market.

The report upon agricultural conditions in Northern Ireland continued to be issued monthly. This report contains information regarding the condition of crops and live stock at the commencement of each month. Prices of agricultural seeds, fertilizers and feedings stuffs are also given, and a quarterly table is inserted giving the average prices ruling for the more important commodities with comparisons of the prices ruling at the corresponding period in the previous year and in pre-war years. Articles upon economic subjects of interest to Northern Ireland farmers are published in the report, while a regular feature is a section entitled "Farm Notes," which is written by a member of the Ministry's technical staff. These notes direct the attention of farmers to the work which should be done on the farm each month, whilst suggestions as to the general management of farm stock and crops are also included.

Census of Production.—Considerable headway was made with the preparation of the report upon the output of agriculture in Northern Ireland during 1925. The report in its final form is at present with the printer, and it is hoped that it will be published towards the end of 1928.

Journal.—Preparation of the second volume of the Ministry's Journal is at present in progress, and a number of articles, giving the results of recent experimental and research work in Northern Ireland, will be published.

General.—The issue of reports showing the number of pigs purchased each week by Northern Ireland bacon curers and the number of live pigs exported from Northern Ireland ports continued to issue each week during the year. These reports also contained similar information with regard to the Irish Free State.

During the potato exporting season reports were issued to the press and to persons interested, giving the price paid by shippers for different varieties of potatoes.

At the Royal Ulster Agricultural Show held in May, a number of charts and graphs were exhibited with a view to indicating the more efficient management of small farms. The comparative density of the pig population in Northern Ireland and in other countries was indicated by the means of diagrams. Publicity was also given to the various reports of the Ministry. Much interest was evidenced in the reports, and a number of copies were sold.

Leaflets.—During the period under review leaflets dealing with the following subjects were prepared by members of the Ministry's technical and research staffs, and became available for issue :—

Potato Blight.

Butter-making on the Farm.

Gapes in Chickens.

Grade A (Tuberculin Tested) Milk.

Breeding and Rearing of Calves.

Destruction of Ragwort or Benweed.

A new series of pamphlets, entitled "Talks to Producers," were issued during the year. Fourteen pamphlets in this series are now available :—

1. Standardise, Organise, Advertise.
2. Winter Eggs from Pullets.
3. Feeding Layers for Profit.
4. Cull the Loafers.
5. Good Housing Means more Eggs in Winter.
6. High Egg Production in Winter.
7. How to Increase the Profits from Dairy Cows.
8. Higher Yields of Potatoes.
9. A few of the Things the Producer wants.
10. Use the Dairy By-Products efficiently.
11. Make the Farm self-contained.
12. Secrets of Winter Egg Production.
13. Reducing the Cost of Pork Production.
14. Money from early Spring Chickens.

Requests for copies of the leaflets and "Talks to Producers" were received from over 2,000 applicants during the year, and in addition large numbers of pamphlets were obtained direct by members of the farming community from the different itinerant instructors. Over 175,000 leaflets and nearly 18,000 "Talks to Producers" were issued on request during the twelve months; these figures afford striking evidence of the interest taken by the farming community in the educational publications of the Ministry. At the Royal Ulster Agricultural Society's Show held in May, over 36,000 leaflets were distributed on request from persons interested in particular phases of agriculture.

A large number of press notices were issued during the year on various matters of agricultural interest.

Library.—The total number of English and foreign periodicals received and circulated during the period was approximately 3,740, whilst the total number of books and pamphlets (excluding all periodicals) was about 2,320. There was thus an increase of about 6,000 in the total number of publications in the Library. A considerable number of the periodical publications are filed in the Ministry's research divisions at Queen's University and Stormont, but each year accommodation must be found for the greater part of the total annual accessions. The total number of publications (excluding periodicals) in the library at the 30th September, 1928, was approximately 16,300.

In connexion with the reclassification and transfer of publications referred to in the sixth report of the Ministry, it is regretted that very little progress can be reported in this particular field, as it was not until the latter half of June that it was found possible to make

any marked advance with this branch of the work. On the other hand there was a marked increase in the work of the library in other directions, as is shown by the fact that the number of publications issued in reply to special enquiries was about 1,230, as compared with rather less than 1,000 in the previous year.

The amount of translation work carried out also showed a very considerable increase over the amount done in the preceding year, the number of translations made number 39 as compared with 23 in 1926-27. Some of the subjects dealt with in the translations were :—

The Work of the International Dairying Federation.

Methods of Seed Testing in various European Countries.

Control of Butter and Cheese Export from Finland.

Campaign against the Warble Fly in Switzerland.

Work of the Sub-Commission on the Classification and Mapping of Soils of Europe.

Export and Import Certificates of Health for plant and animal products in transit between Northern Ireland and various foreign ports.

Poultry Research in Germany.

Exchange of Maps between Ordnance Survey (Northern Ireland) and the Military Geographical Institute at Florence.

14. SURVEYS.

(a) *Ordnance Survey.*

Field Work.—The revision of the 25 inch scale maps of county Londonderry was continued, 35,869 acres being revised, including townland and other boundaries, and 145 miles of roads were re-levelled.

Revision of 6 inch Scale Map.—Plans have been prepared for the setting up of photographic apparatus for the revision of the 6 inch scale maps to which reference has been made in previous reports.

Drawing and Printing.—The drawing, etc., of maps of counties Down, Antrim and Londonderry, and the printing of maps of counties Down and Antrim was continued during the year.

Maps on the 25 inch scale were re-drawn in county Londonderry, covering 29,285 acres. 105,229 acres were recomputed in county Antrim, 20,284 of which were revised, and 84,945 acres were examined. Maps on a scale of 12 inches to 1 mile, covering an area of 175,907 acres were corrected in county Down in preparation for the revision of the 6 inch scale maps of that county so soon as the necessary apparatus is provided.

Eighty-five maps were re-published, and 7,221 new and old maps were printed.

Assistance in the preparation of a Statistical Map was given to the Registrar-General.

Sales.—The number of maps sold was 9,705 to the value of £1,428 10s 4d, and the receipts during the period were £1,313 19s 7d, together with a sum of £134 17s 5d on account of a special survey undertaken in 1926 for the Land Judges' Court.

Free Issues.—Presentation copies under the Copyright Acts amounted to 312 and 92 copies of new maps were lodged with the Northern Ireland Record Office.

Stock.—The stock of maps, all scales, held on 30th September, 1928, was 123,486.

Admiralty Charts, etc.—A set of Admiralty Charts for the Northern Ireland coasts has been obtained, as has also a set of maps of Italy. These charts and maps, together with a set of old 6 inch scale survey maps of Northern Ireland are available for reference.

(b) *Geological Survey.*

Only a small demand for maps and memoirs was met during the year.

The Chief Superintendent of the Northern Ireland Survey Department attended a Conference of Empire Surveyors in London and Southampton in July, 1928, at which mutual problems were discussed, information exchanged and an arrangement arrived at for the exchange of survey publications, etc.

I have the honour to be,

Your Grace's faithful Servant,

E. M. ARCHDALE,

Minister.

JAMES S. GORDON,

Secretary,

Ministry of Agriculture,
Wellington Place,
Belfast,

31st December, 1928.

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‡Resigned as from 31st October, 1928.

LONDONDERRY :—

- Chairman:* ... Robert Guthrie, J.P., Sheep Hill, Ballykelly.
Vice-Chairman: ... H. E. Thompson, J.P., M.B.E., Ballindrum House,
 Coagh, Moneymore.
Secretary: ... T. K. Caldwell, Courthouse, Coleraine.
Instructors: ... D. R. Aiken (Agriculture).
 A. M'L. May (Horticulture and Bee-keeping).
 Miss L. Gray (Poultry-keeping and Butter-making).
 Miss E. E. Clarke (Poultry-keeping and Butter-
 making).
 A. J. M'Farland (Agricultural Overseer).
 E. Graham (Agricultural Overseer).
 D. M'Mullan (Agricultural Overseer).

TYRONE :—

- Chairman:* ... John Johnston, Mountjoy East, Omagh.
Vice-Chairman: ... Thomas Hegan, J.P., Desertcreat, Tullyhogue.
Secretary: ... W. Walsh, Courthouse, Omagh.
Instructors: ... E. S. Daly, A.R.C.Sc.I. (Agriculture).
 W. J. Patterson, A.R.C.Sc.I., N.D.A. (Agriculture).
 J. Algie, B.Sc. (Agriculture).
 D. M'Kenzie (Horticulture and Bee-keeping).
 Miss M. H. Davidson (Poultry-keeping).
 Miss M. A. C. Woods (Poultry-keeping).
 P. Dolan (Agricultural Overseer).
 J. M. Flanagan (Agricultural Overseer).
 J. M'Ferran (Agricultural Overseer).
 W. J. Martin (Agricultural Overseer).

GREENMOUNT AGRICULTURAL AND HORTICULTURAL COLLEGE,
 Muckamore, Co. Antrim.

(Under the management of the Antrim County Committee of Agriculture).

Principal: J. Marchbank, N.D.D.

FERTILISERS AND FEEDING STUFFS ACT, 1928.

List of official Samplers, Inspectors and Agricultural Analysts appointed under the above-mentioned Act.

County or Borough.	Inspector and Official Sampler.	Agricultural Analyst.
Antrim ...	P. T. O'Hare, A.R.C.S.C.I., Finvoy, Ballymoney. R. D. Mackay, N.D.A., N.D.D., Milltown, Antrim.	J. Harold Totton, F.I.C., B.A., B.S.C., 16 Donegall Sq. South, Belfast.
Armagh ..	J. Morrison, B.S.C., Agricultural Organizer, 4 College Street, Armagh. J. Bradshaw, B.S.C.(AGR.), Cathedral Road, Armagh	J. Harold Totton, F.I.C., B.A., B.S.C., 16 Donegall Sq. South, Belfast.
Down ..	J. L. M'Whinney, A.R.C.S.C.I., Agricultural Organizer, 12 Clarendon Avenue, Bloomfield, Belfast. R. W. Dickson, A.R.C.S.C.I., "Yonville," King's Road, Knock, Belfast. R. F. Small, B.AGR., c/o Mrs. Harper, Annsboro'.	J. Hawthorne, PH.D., F.I.C., 16 Donegall Sq. South, Belfast.
Fermanagh ...	D. T. Ritchie, Chanter Hill, Enniskillen.	Chas. M'Mullan, F.I.C., 7 William Street South, Belfast.
Londonderry ...	D. R. Aiken, 1 Union Street, Coleraine.	J. Harold Totton, F.I.C., B.A., B.S.C., 16 Donegall Sq. South, Belfast.
Tyrone ...	E. S. Daly, A.R.C.S.C.I., Coneywarren, Omagh. W. J. Patterson, A.R.C.S.C.I., Patrick Street, Strabane. J. Algie, B.S.C.(AGR.), Dree House, Moy.	R. F. Blake, F.I.C., F.C.S., Scottish Provident Buildings, Belfast.
County Borough of Belfast ...	—	J. Harold Totton, F.I.C., B.A., B.S.C., 16 Donegall Sq. South, Belfast.
County Borough of Londonderry	—	J. Hawthorne, PH.D., F.I.C., 16 Donegall Sq. South, Belfast.

Sale of Food and Drugs Acts, 1875—List of Analysts.

The post of analyst under these Acts for the several Counties and County Boroughs in Northern Ireland is held by the Analyst named in the preceding list.

**Account of Parliamentary Grants in the Year ended
31st March, 1928.**

Vote Class VI, No. 1, Ministry of Agriculture.

(Moneys voted by Parliament to defray the Salaries and Expenses of the Ministry of Agriculture).

RECEIPTS.				PAYMENTS.			
	£	s	d		£	s	d
Parliamentary Grant	67,527	0	0	Salaries, Wages and Allowances ...	54,361	0	4
Appropriations-in-Aid	6	10	0	Travelling Subsistence and Removal Expenses ...	4,900	7	0
				Rent, Rates and Insurance ...	687	6	2
				Fuel, Light, Water, Cleaning Articles, etc.	305	11	2
				Maintenance, Renewals and Repairs ...	197	19	8
				Printing ...	1,632	10	3
				Stationery, Books and Office Supplies ...	662	4	6
				Stationery Office Publications (N.I.) ...	131	12	7
				Law Charges ...	72	9	9
				Postage, Telegrams and Telephones ...	2,355	8	10
				Incidental Expenses ...	752	17	5
				Agricultural Produce Committee ...	203	11	3
				Balance on 31st March, 1928 (to be surrendered) ...	1,270	11	1
	<hr/> £67,533 10 0				<hr/> £67,533 10 0		

(Moneys voted by Parliament to defray the expenses of the Ministry of Agriculture in respect of Agricultural Education and Research, Improvement of Live Stock, Agricultural Development, Agricultural Statistics, Diseases of Animals and Afforestation, including sundry Grants-in-Aid and certain Capital Expenditure under 14 and 15 Geo. V., Chap. 13, s.i. (N.I.), 15 and 16 Geo. V., Chap. 17, s. 13 (1) (N.I.), and 16 Geo. V., Chap. 4 (N.I.))

[illegible]

Summary of Loan Account on 31st March, 1928.

Nature of Loan.	Loans outstanding on 31st March, 1927		Loans issued in 1927-28.		Principal repaid in 1927-28.	Interest received in 1927-28.	Loans outstanding on 31st March, 1928	
	No.	Amount.	No.	Amount.			No.	Amount.
		£ s. d.		£ s. d.	£ s. d.	£ s. d.		
For the purchase of stallions ...	26	1,044 12 6	6	331 13 4	438 17 4	51 2 11	23	937 8 6
For the purchase of bulls ...	1	14 14 0	—	—	14 14 0	0 18 10	—	—
For the purchase of agricultural machinery .	2	180 15 0	4	458 1 3	131 11 3	14 12 7	6	507 5 0
For the erection of fencing ...	—	—	2	110 0 0	—	2 0 11	2	110 0 0
Total ...	29	1,240 1 6	12	899 14 7	585 2 7	68 15 3	31	1,554 13 6

Table showing by Counties the Amounts contributed from Local Rates, and the Amounts contributed by the Ministry for the purposes of Agricultural Schemes under Local Statutory Committees during the year ended 31st March, 1928

COUNTY.	Rate in the £.	Total Produce of and Contributions from Local Rate.	*CONTRIBUTIONS FROM THE MINISTRY.				
			General Grant.	Additional Grant for Agricultural Development.	Agricultural Classes Grants.	Total.	
			£	£ s. d.	£ s. d.	£ s. d.	
Antrim	1	2,537 19 4	*5,615	859 9 0	166 17 0	9,179 5 4	
Armagh	1	1,463 0 0	2,832	379 16 5	31 5 1	4,706 1 6	
Down	1	2,841 14 0	4,846	681 1 4	111 0 10	8,479 16 2	
Fermanagh	1	950 0 0	2,663	663 9 4	23 17 10	4,300 7 2	
Londonderry	1	1,218 4 4	3,048	658 17 3	119 11 10	5,044 13 5	
Tyrone	1	1,742 14 0	4,343	1,210 14 3	144 17 4	7,441 5 7	
Total		10,753 11 8	23,347	4,453 7 7	597 9 11	39,151 9 2	

*This includes a grant-in-aid of £1,000 in respect of Greenmount Agricultural College.

Table showing Expenditure on Agricultural and Live Stock Schemes by County Committees of Agriculture during the Year ended 31st March, 1928.

County	Itinerant Instruction in Agriculture	Winter Agricultural Classes	Horticulture and Bee-keeping	Poultry-keeping and Butter-making	Live Stock	Grants to Shows	Grants to Milk-Recording Associations	Miscellaneous Allocations	General Administration	Scholarships	TOTALS
	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d	£ s d
Antrim	679 2 4	51 7 6	958 8 7	1,170 13 11	2,816 6 5	437 9 11	140 0 0	(a) 422 4 3	787 1 7	(b) 1,661 15 1	9,124 0 7
Armagh	758 14 9	22 4 7	953 17 5	686 6 9	1,511 2 9	194 9 10	40 0 0	—	777 8 4	278 16 3	5,233 0 8
Down	1,067 0 10	56 5 3	997 1 3	1,357 0 11	3,181 11 7	495 14 10	120 0 0	(c) 146 9 5	1,073 9 11	923 5 0	9,417 19 0
Fermanagh	730 11 5	8 14 9	340 6 2	581 15 7	1,811 8 9	89 16 0	90 0 0	(d) 36 18 0	619 4 0	198 5 0	4,506 19 8
L'donderry	678 9 1	30 16 9	448 8 2	1,029 1 5	1,696 1 9	120 0 5	60 0 0	—	669 9 7	539 15 0	5,272 2 2
Tyrone	1,308 14 1	164 1 4	116 14 9	1,053 19 6	2,617 5 11	255 2 1	120 0 0	—	1,105 11 2	692 5 0	7,428 13 10
Total	5,217 12 6	333 10 2	3,814 16 4	5,878 18 1	13,633 12 2	1,592 13 1	570 0 0	605 11 8	5,032 4 7	4,284 1 4	40,973 4 11

(a) (1) For Cottage and Farm Prizes £86 5 4

(2) For Agricultural Overseer ... 335 18 11

(b) Includes £1,030 15s 1d upkeep of Greenmount Agricultural College.

(c) For Cottage and Farm Prizes.

(d) For Cottage and Farm Prizes.

(e) Includes £4,822 1s 6d chargeable against the Agricultural Development Fund.

**Table showing Expenditure on Special Development Schemes by
County Committees of Agriculture during the period ended
31st March, 1928.**

County.	Itinerant Instruction in Agriculture	Agricultural Overseers.	Improve- ment of Pastures.	Improve- ment of Mountain Sheep.	Totals
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Antrim	550 10 8	312 13 1	76 12 7	31 14 0	971 10 4
Armagh	—	306 2 7	69 15 6	—	375 18 1
Down	—	672 14 8	—	—	672 14 8
Fermanagh	—	735 15 1	—	—	735 15 1
Londonderry	—	635 17 8	75 18 3	—	711 15 11
Tyrone	469 19 10	688 13 5	78 1 7	—	1,236 14 10
Total	1,020 10 6	3,351 16 6	300 7 11	31 14 0	4,704 8 11

Expenditure of Local Authorities (County Councils) under the Diseases of Animals Acts and the Orders made thereunder and the amounts recouped to Local Authorities as from the General Cattle Diseases (Northern Ireland) Fund during the year ended 31st March, 1928.

Districts of Local Authorities.	Expenditure of Local Authorities.			Receipts from the dipping of sheep.	Total Net Expenditure.	Amounts repaid to Local Authorities during the year ended 31/3/28 from the General Cattle Diseases (Northern Ireland) Fund.
	Salaries and Allowances of Officers.	Other Expenses.				
	£	s	d	£	s	d
Co. Antrim	850	7	5	1,316	11	4
Co. Armagh	504	3	2	616	2	8
Co. Down	1,003	11	3	1,348	12	9
Co. Fermanagh	387	16	4	259	3	5
Co. Londonderry	675	18	9	591	9	9
Co. Tyrone	985	7	11	1,710	16	6
Co. Boro' of Belfast	336	17	8	61	16	7
Co. Boro' of Londonderry	115	0	0	2	5	0

Account of receipts and payments in respect of the General and Special Accounts of the above Fund in the year ended 31st March, 1928.

RECEIPTS.		PAYMENTS.	
£	s d	£	s d
Balance on 1st April, 1927	3,245 13 1	Recompents to Local Authorities in respect of Compensation and Expenses under the Diseases of Animals Acts	8,126 0 0
Assessments on Local Authorities	5,306 14 3		
Parliamentary Grant (Class VI, No. 2, Sub-head C.4)	3,652 9 5	Fees	—
Proportion of Fines in Prosecutions under Diseases of Animals Acts	152 16 5	Travelling Expenses	—
Bank Interest	174 18 3	Miscellaneous Expenses	10 3 11
Transferred from Special Account	—	Transferred to Special Account	...
		Balance on 31st March, 1928	...
			4,396 7 6
			<u>£12,532 11 5</u>

SPECIAL ACCOUNT.

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RECEIPTS.		PAYMENTS.	
£	s d	£	s d
Balance on 1st April, 1927	—	Salaries of Staff	102 19 8
Parliamentary Grant (Class VI. No. 2, Sub-head C.4)	552 14 8	Fees	—
Salvage of animals slaughtered in connexion with—		Travelling Expenses	58 16 5
(1) Pleuro pneumonia	—	Miscellaneous expenses including cost of requisites for cleansing and disinfection and casual labour in branding, removing, killing, and burying animals and for other petty expenses—	161 16 1
(2) Swine fever	—	(1) Pleuro pneumonia	—
(3) Foot and Mouth Disease	—	(2) Swine fever	37 19 10
Transferred from General Account		(3) Foot and mouth disease	—
Refund in respect of compensation paid in 1926-27 for animals slaughtered in connexion with swine fever	1 5 0	Compensation to owners of animals slaughtered in connexion with—	37 19 10
		(1) Pleuro pneumonia	—
		(2) Swine fever	354 3 9
		(3) Foot and mouth disease	—
		Transferred to General Account	354 3 9
		Balance on 31st March, 1928	—
			—
			£553 19 8

AGRICULTURAL EXPERIMENTS, 1927-1928.

ALTERATIONS AND MODIFICATIONS OF THE PREVIOUS YEAR'S SCHEME.

Expt. No. 1 (a).—Oat variety test. White oats suitable for the better classes of soils. The variety "Utility" was included.

Expt. No. 1 (b).—Oat variety test. White oats suitable for poorer soils. The variety "Tyrone Tawny" was included.

Expt. No. 3.—Oat Crop. Manurial test. This experiment was substituted for the charlock spraying experiment on oats. Details of the experiment are given below:—

Object.—To obtain information regarding the value of Nitro-chalk.

Size of each plot—not less than one-eighth nor more than a quarter of a statute acre. Land selected for this experiment should be of poor quality where a response to a nitrogenous manure is likely to result. The manures to be applied at the time of sowing the oats or some days previously.

Plot 1.—Manured with a mixture composed of 1 cwt. Sulphate of Ammonia, 5 cwt. Superphosphate and 2 cwt. Kainit at the rate of 6 cwt. per statute acre.

Plot 2.—Manured with a mixture composed of 2 cwt. Nitro-chalk, 3 cwt. Superphosphate and 2 cwt. Kainit at the rate of 7 cwt. per statute acre.

Plot 3.—No manure to be applied.

Expt. No. 5.—Wheat crop. Manurial test. The plot dressed at the rate of 65 lb. per statute acre with Chloride of ammonia was omitted.

Expt. No. 7.—Mangel variety test. The variety "Golden Globe" (Lord Warden) was included.

Expt. No. 8.—Potato variety test. The size of screen used for the grading of ware potatoes was altered from 2¼ ins. to 2 ins.

Expt. No. 12.—Manuring of Hay for Seed. In Plot 3, 2 cwt. nitro-chalk was substituted for 1 cwt. calcium cyanamide. In plot 4 muriate of potash was substituted for sulphate of potash.

Details of an experiment framed with a view to ascertaining the effect of increasing the quantities of nitrogen and potash in the mixture of artificials for potatoes are also given below:—

The object of the experiment is to ascertain the effect of increasing the quantities of Nitrogen and of Potash in the mixture of artificials for potatoes.

Size of each plot—one-twentieth of a statute acre.

Each plot is to consist of 4 drills, and weighings are to be taken from the two central drills in each case.

Number of plots.—Each experiment is to consist of 7 plots arranged as follows:—

Plot 1. Artificials only—standard mixture.

1 cwt. Sulphate of ammonia,

4 „ Superphosphate (35%),

1 „ Muriate of potash,

applied at the rate of 9 cwt. per statute acre.

Plot 2. Artificials only—the following mixture,

1½ cwt. Sulphate of ammonia,

4 „ Superphosphate (35%),

1½ „ Muriate of potash,

applied at the rate of 9 cwt. per statute acre.

- Plot 3. Artificial only—the following mixture,
 2 cwt. Sulphate of Ammonia,
 4 „ Superphosphate (35%),
 2 „ Muriate of Potash,
 applied at the rate of 9 cwt. per statute acre.
- Plot 4. Farmyard manure only,
 applied at the rate of 15 tons per statute acre.
- Plot 5. Farmyard manure—15 tons per statute acre,
 standard mixture of artificials,
 applied at the rate of 6 cwt. per statute acre.
- Plot 6. Farmyard manure—15 tons per statute acre,
 mixture of artificials as per plot 2,
 applied at the rate of 6 cwt. per statute acre.
- Plot 7. Farmyard manure—15 tons per statute acre,
 mixture of artificials as per plot 3,
 applied at the rate of 6 cwt. per statute acre.

Variety of potato to be used—Arran Victory.

The crop is to be graded at time of lifting, and yields returned under the heads—ware, seed, chats, diseased.

Pig Feeding Experiment No. 1.—The optional meal mixture was abandoned, and the feeding confined to the second mixture.

The text of an additional “Baby” Beef Experiment is given below:—

Baby Beef Experiment—No. 2.

Object.—To determine the comparative values of two mixtures of cakes and meals for the production of Baby Beef.

Conditions.—The experiment to comprise two lots of calves, with three calves in each. All six calves to be, as nearly as possible, of the same weight and of the same age. If heifers and bullocks are included, the sexes should be equally balanced. The calves should be locally bred and well-reared. They should, if possible, be bred from the same bull. The ages of individual calves in any experiment should not differ by more than six weeks. Subject to this provision, calves born during the months of January, February and March of the year in which the experiment commences, should be selected.

Calves intended for this experiment should be selected in the spring of 1928. All are to be fed similarly until the start of the test, which should be not later than the 1st November, 1928.

Weights of individual calves should be obtained at the beginning of the test, and the two lots balanced as evenly as possible.

Feeding.—Each lot is to receive as much hay and turnips as the animals will consume, but in approximately equal quantities for both lots. The feeding of straw is not recommended.

The additional feeding to be as follows:—

Lot 1.—An allowance of the following mixture of concentrates throughout the entire period—

2 parts by weight	Crushed oats.
1 part „ „	Maize meal.
2 parts „ „	Linseed cake.
2 „ „	Palm kernal cake.

Lot 2.—An allowance of the following mixture of concentrates throughout the entire period—

4 parts by weight	Crushed oats.
3 „ „ „	Maize meal.
2 „ „ „	Palm kernel cake.
2 „ „ „	Linseed cake.

The mixtures of cakes and meals for both lots to be fed in similar quantities throughout the test. At the beginning of the test not less than $1\frac{1}{2}$ lb. per head should be given, and the daily allowance increased gradually as the animals require it. The daily allowance of cake and meals must not, however, exceed 8 lbs. per head daily at any stage of the test.

A careful record must be kept of the concentrated food consumed by both lots, and also a careful note of the dates on which the daily allowances of concentrates are increased. It will be found useful for checking purposes if the instructor has weighed out in separate receptacles the foods required for a definite period for each lot.

The animals in both lots should be given as much water as they will drink. Both lots to be housed throughout the entire period of the experiment.

The weight of each calf must be obtained at the conclusion of the experiment, and a return giving particulars of increases in weight, costs and quantities of foods consumed and prices obtained for calves submitted to the Ministry.

SUBSIDY:—£1 10s 0d per animal, with a maximum expenditure of £10, which should include £1 to the attendant.

Horticultural Experiments 1927-28.

The experiment designed with a view to testing the value of certain sprays for the control of apple scab, and the acarine disease experiment with three stocks were discontinued.

PROVISION OF BULLS FOR MILK RECORDING ASSOCIATIONS.

(Scheme No. 20, Clause 12 (c)).

Sir,

With reference to the above-mentioned subject, I have to inform you that the Ministry has decided to discontinue the arrangement which has hitherto been in force whereby a Milk Recording Association which procured an approved dairy Shorthorn bull was granted a subsidy by the Ministry equivalent to two-thirds of the cost price of the bull. As an alternative the Ministry has arranged with each County Committee of Agriculture that an application from a Milk Recording Association for one premium bull shall automatically be granted, and, further, that two or more premiums may be granted to the same Association. The Committees, however, have been instructed not to sanction an application from a Milk Recording Association for a premium for an Aberdeen Angus bull unless there is a high-class dairy bull already available in the district for the use of members of the Association.

Accordingly, if your Association desires to have a premium bull next season for the use of its members it will be necessary for the Association to communicate as soon as possible with the Secretary of the County Committee of Agriculture concerned, making application on behalf of the Association for a premium under the general provisions of the Ministry's Cattle Breeding Scheme No. 2 (copy enclosed).

It will be observed from Clause 13 (2) of the enclosed Cattle Breeding Scheme (No. 2) that an exception to the regulation regarding the location of bulls of the same breed within three statute miles of each other is permitted in the case of premium bulls reserved for the exclusive use of members of approved Milk Recording Associations.

I have to add that the Ministry is prepared to grant loans to recognized Milk Recording Associations in connection with the purchase of premium bulls. Full particulars regarding the terms on which the loans will be available may be had on application to these offices.

I am, Sir,

Your obedient Servant,

JAMES S. GORDON,

Secretary.

Supervisor,

..... Milk Recording Association.

No. A.376/28.

GOVERNMENT OF NORTHERN IRELAND,

MINISTRY OF AGRICULTURE,

WELLINGTON PLACE, BELFAST,

1st August, 1928.

AGRICULTURAL DEVELOPMENT FUND.

Sir,

I have to state, for the information of your Committee, that, as a result of representations made by the Ministry to the Ministry of Finance with regard to the urgent need for affording additional assistance to the agricultural industry in Northern Ireland in its present depressed condition, a special grant of £23,850 will shortly be made available for expenditure over a period of about ten years through the agency of the County Committees of Agriculture, for the purpose of developing the Poultry Industry. This sum of £23,850 will be incorporated in the Agricultural Development Fund, and advances will be made to County Committees of Agriculture in accordance with the Regulations governing the administration of that Fund. Applications for advances must be made in duplicate and must contain the particulars set out in Article (3) (ii) and (iii) of the Regulations. A special form of application is in course of preparation, and copies will be sent to you at an early date.

The Ministry has decided that these supplementary funds will be utilized in extending the existing Poultry Stations Scheme, and especially in establishing new poultry stations in the poor districts (as defined in the map supplied to you in connection with the placing out of "Special Term" bulls last spring) on special terms and conditions (as specified in the enclosed memorandum) which will apply to these poor districts only. It should be clearly understood, however, that stations already established in the defined poor areas will not be entitled to participate in the proposed new arrangements. A total increase of 82 hen (or hen and duck) stations, 200 turkey stations, and 60 goose stations in the six counties during the forthcoming season is contemplated. In the following season (1929/30) it is hoped that 70 additional hen (or hen and duck) stations will be established, bringing the total number of these up to 152, and that the 200 turkey stations and 60 goose stations will be continued.

While the responsibility for arranging for the stocking of the new stations will rest upon the instructors in poultry-keeping, the Ministry will assist, as far as practicable, in procuring suitable birds and poultry-houses. It should be possible to obtain poultry-houses at a reduced rate if ordered in quantity and, if your Committee so desires, the Ministry will obtain quotations from contractors for a standard house. If a selected applicant should prefer to build an approved house, the conditions of the existing scheme will apply.

With regard to turkey and goose stations throughout each county, the Ministry considers that the premium for a turkey station should be £2 15s and for a goose station £2. No grants will, however, be made for the provision of birds for these stations, and the regulation regarding the proximity of stations will remain unaltered.

After careful consideration of the needs of each county, and taking into account all the relevant factors, the Ministry has allocated the sum of £100,000 to provide for the establishment of stations in County ... in 1928/29 as follows—

Hen and Duck Stations	In the poor defined districts	...
	In other districts	...
Turkey Stations	...	...
Goose Stations	...	...

Assuming that pullets will be obtainable at 10s each, and cockerels at 12s 6d each, and that a poultry-house will cost £14, the net cost of establishing a hen (or hen and duck) station in a defined poor district will be £19 12s 0d, i.e., 30 pullets at 7s 6d each, 3 cockerels at 9s each, and poultry-house at £7 (half cost). As, however, the full cost of the poultry-house will be paid by the County Committee in the first instance the necessary additional funds have been allocated in consequence. In the case of new stations which are not being established in poor districts, the provisions of the existing Poultry Stations Scheme regarding grants towards the cost of birds and houses will apply where necessary.

The financial provision for County ... for stations to be established in the forthcoming season will, accordingly, be as follows:—

1928/29.

Grants for birds and houses for hen and duck stations in the defined poor districts @ £19 12s each ...

Premiums for these stations—against half cost of poultry-houses ...

Grants for birds and houses for hen and duck stations in other districts @ £14 each ...

1929/30.

Premiums for hen and duck stations in other districts @ £7 each ...

Premiums for turkey stations @ £2 15s each ...

Premiums for goose stations @ £2 each ...

As the purchase of birds and houses will be made during the quarter ending the 31st December, 1928, it will be necessary that the application on behalf of your Committee for a sum of £ ... be made to the Ministry on or before the 10th proximo. The premiums payable in respect of turkey and goose stations and hen (or hen and duck) stations established outside the defined poor districts will not fall due until the quarter ending the 30th September, 1929, and application for the necessary advance would, accordingly, require to be made not later than the 10th June, 1929.

Of the 70 additional hen (or hen and duck) stations to be established in 1929/30, it is intended to provide for the establishment of ... in County ...

In the event, however, of its being found possible to establish hen (or hen and duck) stations in 1928/29 in excess of the number already specified, the number to be established in 1929/30 would be correspondingly reduced. Where the number established in 1928/29 exceeds the original estimate, it will, of course, be necessary to apply for the additional funds to cover the cost of the extra stations.

I have to add that the Ministry has already discussed the various points of the scheme with the instructors in poultry-keeping and the agricultural overseers, and has impressed upon them the urgent necessity for making a special effort to secure the establishment of as many new stations as possible in the coming season, especially in the defined poor districts. Having regard to the importance of the poultry-keeping industry in Northern Ireland, and to the pressing need for its extension and development, the Ministry trusts that your Committee will lose no opportunity of bringing to the knowledge of poultry-keepers in the county particulars of this supplementary scheme which has been introduced for their benefit, and will do their utmost to ensure the increase in the number of poultry stations in the county which the provision of these additional funds has rendered possible.

I am, Sir,

Your obedient Servant,

JAMES S. GORDON,

Secretary.

The Secretary,

County Committee of Agriculture.

MEMORANDUM.

Terms and conditions governing the establishment of new poultry stations in the poor districts (as defined in connection with the placing out of "special term" bulls last spring).

Arrangements shall be made through the instructors in poultry-keeping for applicants in the "defined" districts who are selected to keep hen (or hen and duck) stations to be supplied with the requisite number of pullets (or hens) and ducks at 2s 6d each and cockerels at 3s 6d each, carriage paid, and also to be given a grant for a poultry-house equivalent to 50 % of the cost, where the cost does not exceed £14. The balance of the cost chargeable to the station-holder in respect of a poultry-house will be deducted from the amount of the premium subsequently payable; in other words, the station-holder will be supplied with the poultry-house without making any payment, and the station-holder's share of the cost will be deducted from the premium which would normally be payable after the end of the distributing season.

The maximum number of birds which may be supplied on the specially reduced terms to any selected applicant will be 30 pullets (or hens) and 3 cockerels.

Selected applicants will be required to dispose of all birds of which the instructor in poultry-keeping may disapprove, and otherwise to adhere to the conditions of the Poultry Stations Scheme. Existing birds of the approved breed may, of course, be retained for station purposes if considered suitable by the instructor in poultry-keeping. No money allowance will, however, be made in respect of birds so approved.

BREEDS.

The majority of the hen stations in the "defined" poor districts shall be stocked with Rhode Island Reds, and the remainder with White Wyandottes and White Leghorns.

LOCATION OF STATIONS.

The establishment of a station with a heavy breed within three statute miles of a station with a light breed will be permitted, but the

location of stations with breeds of the same type within three statute miles of each other will be sanctioned by the Ministry only in exceptional circumstances.

DISTRIBUTION OF SITTINGS.

The conditions as to the number of sittings to be distributed and the selling price for sittings will be as in the Poultry Stations Scheme. *Eggs that are less than 2 oz. in weight may not be distributed under the Scheme.*

UNDERTAKING TO BE GIVEN BY SELECTED APPLICANT.

Applicants in the "defined" poor districts who are selected to keep hen (or hen and duck) stations will be required to sign an agreement to keep the station for three seasons to the satisfaction of the County Committee and the Ministry, and, in the event of their failing to do so, to refund to the County Committee the balance for the full cost of the birds and houses supplied.

A form of agreement is being prepared, and copies will be available in due course.

1st August, 1928.

